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Self-Portraiture and Self Awareness, 1900-2000: Evidence from Museum Metadata and Visual Analytics

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ABSTRACT

This article traces how twentieth-century self-portraiture reconfigured the representation of selfhood across changing media. We assemble a corpus of 394 self-portrait records (1900-2000) from open museum catalogs (Met Open Access, Tate Collections, MoMA), harmonize medium and keyword fields, and apply Python/MATLAB visual analytics (time series plots, thematic breakdowns, word frequency mapping, and media share trends). This combined approach links collection metadata to close visual reading, providing a reproducible, cross-media view of how artists mobilized painting, photography, installation, and video to construct identity.

Results show: decadal production peaks that align with major crises and postwar reconfigurations; Expressionist self-portraits clustering around psychological anxiety and trauma; Surrealist self-portrait keywords concentrating on identity, mirror, body, pain, duality, and hybridity; and a late-century shift in which photography and installation outpace painting as primary vehicles for self-imaging. Treating artworks as visual resources embedded in institutional catalogues demonstrates how metadata-driven evidence can clarify long-term changes in subjectivity, media, and display. Data tables and code support replication and reuse.

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Theoretical Foundations and Quantitative Insights into Modern Self-Portraiture

Art history has richly theorized the modern self-portrait as a privileged site for negotiating authorship, embodiment, and spectatorship [1,2]. The self-portrait is often seen as a double-simultaneously an index of the artist's identity and a laboratory for stylistic experimentation [1]. The Romantic legacy of introspection and alienation fed early modernist inquiries into psychic structure, producing Expressionist distortions that aim less to faithfully depict appearances than to exteriorize affect and inner turmoil [2]. In parallel, Surrealism sought to reconcile dream and waking states, shifting self-representation toward the oneiric and the automatic. Yet despite this rich theorization, longitudinal, cross-media measurements are still lacking to show how artists collectively reconfigured self-representation as visual technologies and display formats changed across the twentieth century. Traditional case studies capture the intensity of individual practice-Munch's existential disequilibrium, Beckmann's war-shadowed self-scrutiny, Kahlo's gendered and cultural inscriptions-but they rarely scale up to evidence about when, how, and in what media self-portraits were made and catalogued over time.

This study addresses that gap by treating open museum catalogues as "visual resources" in their own right. Records from the Metropolitan Museum of Art's Open Access program, Tate Collections, and the Museum of Modern Art were integrated to assemble a harmonized sample of 394 self-portraits dated 1900-2000. After cleaning, deduplication, and controlled vocabulary mapping for medium and theme, decadal production curves, movement-specific thematic distributions, Surrealist keyword neighborhoods, and the late-century medium shift from painting toward photography (and subsequently, video/digital) are visualized. This quantitative mapping complements close visual analysis with a bird's-eye view of how self-portraiture evolved as an artistic strategy across the century.

The guiding questions are simple and measurable:

- Production dynamics: Do decadal counts of self-portraits track historical shocks and realignments (e.g., wars, cultural shifts)?
- Thematic variation: How do self-portrait themes vary by movement (Expressionism vs. Surrealism) and by the work's rhetorical address (identity work, trauma, social critique, death/existentialism, war)?
- Media shifts: When do photography, installation, and video overtake painting in self-portrait practice?

These questions are operationalized using a framework that links presentation/performativity, embodiment, and mediation to catalog features. Self-portraiture functions as staged self-presentation within audience and institutional frames (Goffman 1959,7): "the self, then, as a performed character, is not an organic thing...; it is a dramatic effect arising diffusely from a scene that is presented" [3]. Processes of subjectivation-cataloging, classification, display-shape what counts as a legible "self-portrait," making the label itself an institutional act [4,5]. Embodied perception clarifies the persistent return to bodily inscription as a mode of engaging viewers [6]. For the pre-war avant-gardes, debates on abstraction/empathy [7], psychic structure [8], and spectatorship/spectacle [2,9] anticipate the metadata themes tracked in this study [2]. These premises guide the coding in Figures 1-4: thematic buckets (Psychological Anxiety & Trauma; Social Critique; Individual Identity; Death & Existentialism; War Trauma), movement filters (Expressionism; Surrealism), and media classes (Painting; Photography; Installation; Video/Digital).

Related Work

Self-portraiture as Modern Problem

The self-portrait has long been viewed as a barometer of artistic subjectivity and a "problem space" for modern identity. Histories of modern portraiture emphasize the self-portrait's double function as both the index of identity and a laboratory for style [1]. The Narcissus myth suggests that self-portraiture is bound up with self-awareness and self-alienation [1]. In the modern era, this dynamic is intensified. The Romantic era's legacy of introspection, isolation, and the cult of genius made the artist's own image a natural subject for probing existential questions [2]. Early twentieth-century self-portraits often register psychological crisis or alienation: for example, Edvard Munch's Self-Portrait with Burning Cigarette (1895) and Self-Portrait in Hell (1903) present the artist's face as haunted and dissolving, visualizing the "disequilibrium" and angst that John Berger identified as a hallmark of modern self-regard [2]. Expressionism treated the self-portrait as an inner portrait-distorting the face and body to project subjective states. This inward turn responded to broader social trauma. The devastations of World War I gave self-portraiture a new urgency as a form of witness and coping. Artists like Max Beckmann produced self-portraits that grapple with war's psychological shadow (e.g., his gaunt Self-Portrait in Uniform, 1915), while Käthe Kollwitz's stark self-portrait prints evoke collective grief through her own visage. In short, the modern self-portrait became a site where personal identity and historical crisis intersect, making it, as Joanna Woodall (1997,8) puts it, a genre that faces the subject in both senses -confronting the artist's own face and the thematic subject of modernity itself.

Performance, Face Politics, and the Post-Photographic Self

The rise of lens-based media in the twentieth century transformed the face into a site of procedural and performative construction-serial, modular, or masked. Photography introduced new ways to fragment or multiply the self's image. For instance, Cindy Sherman's serial self-portraits, where she assumes multiple roles and disguises, subvert conventional portrait tropes, replacing physiognomic likeness with a "dynamic, unstable and relativized identity" for the female artist-sitter. Similarly, Chuck Close's gridded approach to portraiture-constructing faces via small units-suggests the "self" is an assembly of technical processes rather than a transparent essence. Close noted that his hyper-realist canvases were "less images of people than of the photographs" used to create them, with "likeness... only a by-product" [1].

In the late twentieth century, an expanding spectacle culture foregrounded issues of circulation and mediation [9]. As Guy Debord wrote, "the spectacle... is the self-portrait of power in the epoch of its totalitarian management of the conditions of existence" [9]. Artists responded by using their image to probe this spectacle. Sherman's film-still-style photographs parody media stereotypes of women, while Andy Warhol's repeated silkscreen self-portraits comment on celebrity image circulation. Scholar Jenny Edkins describes this as face politics, where faces become sites of power and resistance, often masked or deconstructed to challenge identity norms [10]. Recent "distant viewing" approaches in digital art history argue that large image collections can be analysed computationally while retaining interpretive [11,12]. The present study builds on this by treating hundreds of self-portraits as data to discern patterns in media and themes, interpreted through theories of performance and spectatorship.

Toward a Resource-Aware Art History

The availability of open collections data (Met, Tate, MoMA) under CC0 licenses enables scholars to treat museum catalogues as analysable corpora, fostering a resource-aware art history that bridges quantitative analysis and traditional scholarship. Using metadata from digitized artworks, the present study incorporates a broader range of objects beyond the most famous works, employing methods similar to textual digital humanities. This approach complements close visual reading with longitudinal measures to reveal shifts in the self-portrait's function. Plotting production over decades or tallying keywords raises questions: Why the surge of self-portraits in the 1920s? What explains the decline in the 1940s? How do Surrealist and Expressionist work descriptions differ? These quantitative signals guide interpretation back to context and meaning. This approach aligns with recent efforts to apply computational tools to museum collections for discovery [12,13], echoing calls by digital art historians to use such methods not as ends in themselves but as prompts for new perspectives scholar.google.com. Catalogues, shaped by institutional priorities, are not neutral but reflect what museums deem worthy of inclusion. By analysing these records, the study examines both art objects and their mediated presence, yielding insights into how self-portraiture's visibility and valence evolved across the twentieth century.

Data and Methods

Corpus Assembly and Deduplication: The Metropolitan Museum of Art's Open Access API, Tate Collections, and MoMA's collection data were queried to retrieve metadata for objects tagged with multilingual variants of "self-portrait" (e.g., "self-portrait," autoportrait, autorretrato, Selbstbildnis). The raw records were merged and deduplicated using artist name, title, and year, with manual checks for near duplicates (e.g., Self-Portrait with Hat vs. Self Portrait (in a Hat)). The cleaned sample includes 394 unique records from 1900-2000.

Normalization:

- **Dates:** Date ranges or circa dates (e.g., "c. 1923-1925") were reduced to a midpoint year and assigned to decade bins (e.g., 1923 maps to 1920). Sensitivity checks confirmed that shifting bin boundaries (±5 years) did not significantly alter production curve trends.
- **Mediums:** Medium strings were mapped to four classes: Painting, Photography, Installation, or Video/Digital, using rule-based parsing. Terms like "video" or "film" mapped to Video/Digital, "gelatin silver print" to Photography, and "oil on canvas" to Painting. Ambiguous "mixed media" cases

followed a precedence order: Installation → Video/Digital → Photography → Painting. Excluding ambiguous entries confirmed the 1990s medium crossover was not an artifact of assignment rules.

- **Themes (Expressionism only):** For Expressionist and New Objectivity self-portraits, five thematic categories were coded: Psychological Anxiety & Trauma, Social Critique, Individual Identity, Death & Existentialism, and War Trauma. Themes were assigned based on titles, content, and metadata keywords, with trauma or death taking precedence over generic identity labels.
- **Surrealist Tokens:** For Surrealist self-portraits, title and keyword tokens were aggregated and normalized by lowercasing, stripping accents, removing stop words, and collapsing synonyms (e.g., mirrors → mirror). Frequent thematic words were extracted to analyze Surrealist metadata patterns.
- **Tools and Reproducibility:** Data cleaning and tokenization used Python (pandas, regular expressions), with plotting in MATLAB and matplotlib. Four figures were generated from processed CSV datasets, ensuring offline reproducibility. All code, with documented regex and stop word lists, is publicly available for auditing and reuse (see Note 5).

Results: Transitional Overview

Four visualizations (Figures 1-4) outline macro-patterns in twentieth-century self-portraiture. Figure 1 plots self-portraits by decade, with interwar growth, WWII-era dip, and 1980s peak. Figure 2 measures themes in Expressionist and New Objectivity works, emphasizing identity alongside war/death motifs. Figure 3 clusters Surrealist keywords around identity, mirror, body, dream, duality, hybridity, diaspora, and rituals. Figure 4 shows painting's decline versus rising photography, installation, and late video/digital media. These reveal self-imaging's response to history and technology.

Figure 1. Decadal Dynamics of Twentieth-Century Self-Portraiture (1900-2000). The production curve rises from a modest 1900s-1910s baseline to a 1920s interwar peak, then contracts sharply across the 1930s-1940s, and finally accelerates from the 1960s into a 1980s apex. There is a slight retreat in the 1990s (the final bin includes only the year 2000). The shaded bands in Figure 1 mark the World War periods, which align with notable dips in output.

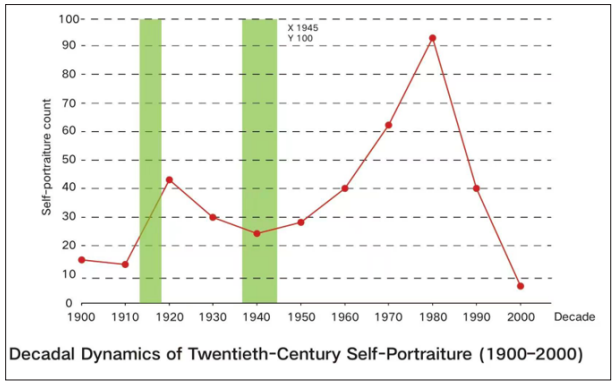

Figure 1: Self-portrait production by decade (1900–2000). Decadal counts from harmonized Met/Tate/MoMA records, shown as timeline. Multilingual stems identified self-portraits. Shaded bands mark WWI (1914–18) and WWII (1939–45), aligning with production dips.

Alt-text: Line chart showing the count of self-portraits per decade from 1900 to 2000. The line rises sharply in the 1920s, dips in the 1930s-1940s, then climbs to a peak in the 1980s before a slight retreat in the 1990s.

This pattern appears crisis-sensitive. The interwar expansion (1920s) tracks the consolidation of avant-garde networks and the professionalization of the artist as a public persona in that decade [2]. After the chaos of WWI, artists found new freedom and impetus to assert themselves, often forming groups and manifestos; the self-portrait was a natural vehicle for this newfound self-consciousness as an artist. Conversely, the wartime declines in the 1940s reflects multiple factors: dislocation and exile of artists (many European artists fled fascism or were drafted, limiting their output), censorship and suppression of avant-garde art under totalitarian regimes, and even practical issues like scarcity of materials and interruptions in museum acquisitions during the war years. Self-representation likely took a backseat to survival for many. Interestingly, the 1930s show a plateau or dip even before WWII fully erupts, possibly due to the mounting pressures of the Depression and rising authoritarianism. After 1960, a steep acceleration aligns with the rise of identity politics (e.g., civil rights, feminism, postcolonial discourse) and an expanded global exhibition circuit that elevated personal narrative and autobiography. The 1970s-1980s saw the spectacularization of self-imaging consider the influx of performance art and the cult of the artist personality in media -which likely contributed to more artists turning the lens or brush on themselves [9]. By the 1980s, the apex reflects both the art market boom (more shows, more acquisitions) and the high tide of postmodern identity exploration. Reading the curve through these theoretical lenses, Goffman's dramaturgy suggests that as the "performance" of being an artist became more salient in the late 20th century, artists created more self-portraits to present and negotiate their persona on the art-world stage [3]. Foucault's notion of institutional regimes would point out that museums by the late century were actively curating identity-based shows, thereby cataloging more self-portraits- a shift in what was considered a legible or important work. Merleau-Ponty's focus on embodiment helps explain the persistent return to body-centered imagery even in eras when formal likeness was de-emphasized-the body remains a primary site for asserting "I am here" in an otherwise de-personalized technological world [15]. In summary, artists negotiated visibility and subjecthood under changing institutional and social conditions, and the self-portrait count rises and falls accordingly [16].

Figure 2. Theme Distribution in Expressionist/New Objectivity Self-Portraits. In the movement-filtered subset, the Individual Identity category dominates at roughly four-fifths of the sample, indicating that most Expressionist self-portraits were coded as primarily concerned with depicting the self (the artist's identity, personality, or inner state). However, the remaining fifth is significant: about 10% fall under War Trauma and ~5% under Death & Existentialism, with Psychological Anxiety and Social Critique each only a few percent. (Proportions are rounded to one decimal place in the figure for clarity.)

Alt-text: Pie chart showing thematic categories in Expressionist/New Objectivity self-portraits. Approximately 80% of the pie represents Individual Identity, about 10% War Trauma, 5% Death & Existentialism, and smaller slices for Psychological Anxiety and Social Critique [17]

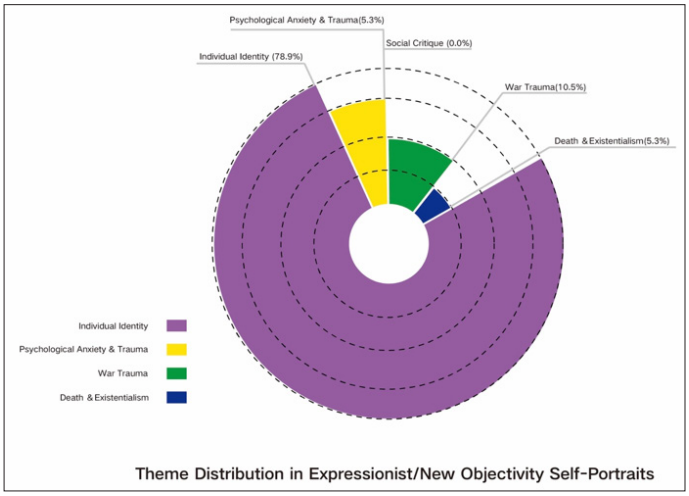

Figure 2: Theme distribution in Expressionist/New Objectivity self-portraits. Movement filter isolated relevant works. Each assigned one primary theme (from five categories in text). Pie chart displays proportions (rounded to one decimal). Codebook and rules included in data for transparency.

This distribution suggests that Expressionist self-portraits most often frame social catastrophe as personal inscription. Even when addressing broad turmoil, the artist tends to internalize it. Rather than making overt political statements or documentary images of war's impact, Expressionist artists use mirrors, masks, and bodily deformation as instruments of self-fashioning that indirectly signal external chaos. For example, in Ernst Ludwig Kirchner's harrowing Self-Portrait as a Soldier (1915), the artist's own mutilated hand and blank stare convey the psychic damage of WWI without depicting the battlefield. Similarly, Käthe Kollwitz's series of lithographic self-portraits (such as her 1924 image of herself in mourning) serve as both personal expressions of grief and universal icons of loss, blurring the line between individual and collective trauma. The overwhelming prevalence of identity-themed works aligns with Wilhelm Worringer's idea that in times of uncertainty, artists feel "insecurity" and seek to abstract or internalize form as a buffer against a hostile world [7]. In Expressionist self-portraits, turning inward and abstracting the self (through stylistic distortion or symbolic imagery) provided a semblance of order against external chaos. Worringer noted that the modern "urge to create fixed, abstract forms" is a response to the sense that individual identity is threatened by a disordered world [7]. Indeed, many Expressionist self-portraits (think of Egon Schiele's contorted bodies or Emil Nolde's mask-like faces) convey a defensive posture, as if shielding the self from a dehumanizing external reality through expressive deformation. Additionally, this thematic breakdown resonates with C. G. Jung's emphasis on the introverted psyche grappling with archetypal shadows [8]. Even works that have a social critique element (e.g., George Grosz's biting self-caricatures) do so through the artist's persona, again centering the self as the locus for processing modern life's ills. In sum, Figure 2 underscores that for Expressionist and New Objectivity artists, the self-portrait was predominantly an identity project- but one that frequently bore the scars of its time, registering war trauma and existential dread in significant measure. (A codebook and mapping rules for these themes are provided with the data; see Note [3].)

Figure 3. Surrealist Self-Portraits: Keyword Clusters around Identity, Body, Dream, and Hybridity. The visualization (rendered as a word cloud or network) shows the top tokens associated with Surrealist self-portraits, revealing a thematic neighborhood centered on identity, the body, and oneiric imagery. The top seven tokens form a core: identity, mirror, body, pain, dream, duality, hybrid. Just below these in frequency, we find terms like mask, persona, myth, memory. Further out (less frequent but noteworthy) are tokens pointing to cultural and ritual elements: orisha, Yoruba, creole, diaspora, Tehuana, mestizo. These latter terms appear thanks to figures like Wifredo Lam (whose Afro-Cuban heritage introduced orisha and Yoruba spiritual concepts into his work) and Frida Kahlo (whose self-portraits incorporate Tehuana dress and mestizo identity). The presence of both core psychological terms and culturally specific vocabulary indicates a blend of the universal and the particular in Surrealist self-portrait discourse [18].

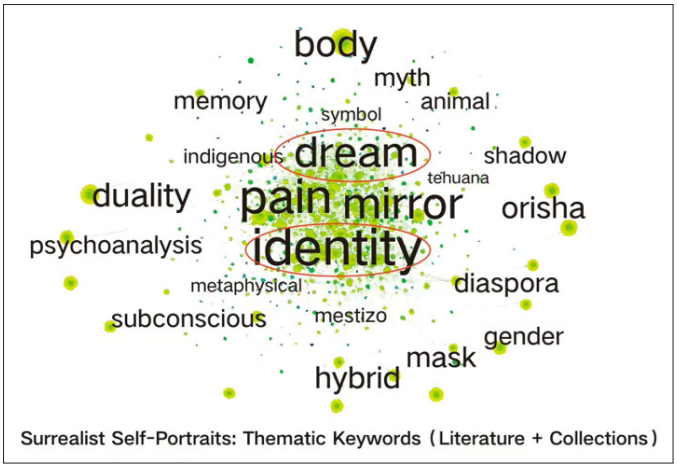

Figure 3: Surrealist self-portrait keywords from metadata/ literature. Tokens from titles/subjects, plus scholarship on figures (Dalí, de Chirico, Kahlo, Carrington, Lam). Text normalized/ lemmatized. Visualization groups terms, showing clusters on identity, body, dream, duality, hybridity, and culture. Frequency table provided.

Alt-text: Word cloud of frequent terms in Surrealist self-portrait metadata. Prominent words include "identity," "mirror," "body," "pain," "dream," "duality," and "hybrid," alongside smaller terms like "mask," "persona," "myth," "memory," "orisha," "Yoruba," "diaspora," "Tehuana," and "mestizo."

This keyword cloud confirms that Surrealist self-portraiture is not primarily about straightforward likeness-it links self-construction to dream-work, mythology, and corporeal transformation. Recent scholarship likewise highlights how artists used self-portraiture to negotiate hybrid identities: for example, Frida Kahlo and Chinese painter Pan Yuliang both mobilized personal symbolism and cross-cultural imagery to reconstruct a self beyond a single tradition (Zhou 2025. In general, the Surrealist self-portrait presents the self as protean-part dream, part body, part culture-a collage rather than a singular identity. Breton's first Surrealist manifesto envisioned resolving dream and reality into "an absolute reality, a surreality" (Breton 1969,14), and Surrealist self-portraits enact this idea: the self appears not as fixed but as a fluid meeting point of the conscious and unconscious. The prominence of dream, mirror, and duality shows how artists pictured themselves in states of metamorphosis or reflection, often using doubles and mirrors to explore the split between observing and observed selves. The token body (and related terms like mask) underscores the body as a primary site for Surrealist explorations of identity-sometimes fragmented, sometimes fused with other elements. Kahlo's dreamlike depictions of her body (e.g., split in two, joined with fauna, or merged with symbols) express pain, hybridity, and heritage. The

frequent token pain reflects how bodily or psychic injury pervades this corpus (as in Kahlo, Carrington, or Zürn). The diasporic and ritual lexicon (orisha, Yoruba, diaspora, etc.) suggests that for some Surrealists, identity work was explicitly cultural-political. Lam's Self-Portrait (1945) infuses his visage with Afro-Caribbean mask forms, reclaiming non-European spirituality within a Surrealist context. Kahlo's The Two Fridas (1939) similarly stages a dual self-one in Tehuana dress, one European-joined by a vein and a shared heart, emphasizing hybridity. Scholars have long noted that Surrealist self-portraiture is as much about becoming other as depicting the self, stressing role-play and self-mythologizing (cf. Claude Cahun's fluid photographic personae). The tokens mask and persona underscore this masquerade and constructed identity, anticipating later performative self-portraits in postmodern art. (Proper names were removed from this analysis, and variant terms were consolidated, as detailed in Data & Methods; see Note [4].)

Figure 4. Medium Shifts in Self-Portraiture, 1960s–2000s. This figure charts the proportion of self-portraits in our dataset by medium category for each decade from the 1960s onward. The 1960s begin with Painting as the dominant medium. However, from that point, Photography shows a sharp rise: by the 1980s the share of photographic self-portraits rivals or exceeds that of paintings, and by the 1990s photography clearly surpasses painting as the primary medium of self-portraiture in our sample. Installation art and Video/Digital art, virtually absent in the 1960s, grow from near zero to substantial shares by the 1990s and 2000s. By the 2000s (just beyond our main scope), video/digital works form a noticeable portion, reflecting the emergence of new media in self-representation. In short, the timeline shows a medium displacement: painting → photography → installation/video, with photography's overtaking of painting happening around the 1990s [19].

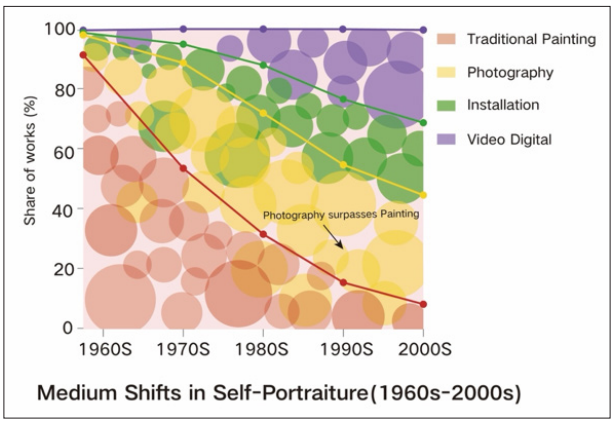

Figure 4: Media usage trends in self-portraits, 1960s–2000s. Stacked bars/areas show proportions of Painting, Photography, Installation, Video/Digital per decade (normalized to 100%). From harmonized records; media mapped via rules (see Data & Methods). Photography overtakes painting by 1990s. Video/Digital includes electronic/computer works. 2000s covers only 2000, highlighting shifts.

Alt-text: Stacked area chart showing the proportion of self-portraits by medium (Painting, Photography, Installation, Video/Digital) for each decade from the 1960s to 2000s. Painting dominates in the 1960s but declines thereafter; by the 1990s photography is the largest segment, with Installation and Video/Digital emerging significantly.

This pattern marks the relocation of self-portraiture into lens-based and conceptual practices. As society entered what Debord termed the spectacle and later the digital era, artists increasingly used cameras, video, and installations to explore identity [9]. By the 1970s, photographic self-portraiture was well established through artists such as Sherman, whose Untitled Film Stills examined identity through staged roles [9]. The data show this shift: the 1970s-80s reveal photography's steep ascent as the self-portrait left the easel for the darkroom and video studio. By the late twentieth century, artists reconceived the self-portrait as serial, procedural, and performative. Sherman's multiple personae exemplify this, while installation art turned self-portraiture into immersive experience. In the 1990s, artists like Nikki S. Lee and Yayoi Kusama incorporated their image into room-scale environments, while video introduced duration and narrative through works by Acconci and Abramović. Such media had by then become central to self-representation. The shift moves from likeness to apparatus: early modern artists asked how to capture likeness in paint; late-century artists questioned how identity is constructed through media. The spectacle of self-presentation became a theme itself [9]. Sherman's serial personae and Close's gridded faces expose likeness as constructed rather than innate [9]. Installation and video underscore identity as temporal and performative, with artists staging selfhood and inviting viewer participation.

From a theoretical perspective, this medium shift supports postmodern and posthuman claims that identity is fluid and "distributed" across media. As Braidotti argues, the subject is "a complex assemblage of human and nonhuman elements." Late-century self-portraits integrate technology and artificial environments, revealing the self's entanglement with recording apparatus. The media expansion parallels technological changes in self-imaging-from camcorder and computer to early digital platforms-redefining self-visualization. (Robustness check: varying classification rules confirmed the 1990s photography-painting crossover. Even excluding "mixed media," results stayed stable, showing the shift as genuine institutional/artistic change, bolstered by museums' increased acquisition of photographs and installations.)

Discussion

From Likeness to Apparatus

The trajectory of self-portraiture across the century can be understood as a shift from likeness concerns to explorations of self-imaging apparatus [20]. Early modern self-portraits often grappled with representing one's likeness sincerely or expressively on canvas. By the late 20th century, many foregrounded production means (camera, video, mirror) and identity mediation. Warhol's repetitive photo-silkscreens, for instance, focus equally on image multiplication processes as on his face; they transform self-portraits into commentaries on mechanical reproduction and celebrity. In the 1990s, digital tools advanced this trend: artists used photocopiers, computers, and the internet for self-images that could be morphed or circulated endlessly. The self-became "post-medium," manifesting as performance documentation, interactive installations, or online personae. This indicates that by century's end, traditional painted self-portraits-focused on individual likeness-yielded to a broader field centering self-imaging apparatus and context (camera, archive, audience, network). As seen, photography and installation overtook painting by 2000 (Figure 4), underscoring this pivot. Ultimately, self-portraiture shifted from "what I look like" to "how I am represented and where I appear." This reflects the postmodern self as constructed and performed, not innate.

Performing the Self: Dramaturgy, Discipline, Embodiment

Our results can be interpreted through the three theoretical perspectives outlined earlier:

• **Dramaturgy (Goffman):** Mirrors, masks, and personas in self-portraiture, from Velázquez's Las Meninas to Magritte or Pistoletto, act as technologies of self-presentation, highlighting the staged nature of the image (Goffman 1959,7,18)[3]. Artists, as both performer and character, tailor their image for an imagined audience, managing impressions as in social interactions. Theatrical elements like masquerade or role-play (e.g., Sherman as everywoman, Cahun as gender-ambiguous dandy) show self-portraiture as a performance of identity, navigating front-stage and back-stage personae. Data reveal spikes in self-portrait production during periods of social flux (1920s, 1960s-80s), aligning with Goffman's view that individuals work harder to define a self when norms are disrupted.

• **Discipline (Foucault):** Foucault's insight that cataloging and classifying are disciplinary mechanisms illuminates the constructed nature of the "self-portrait" category (Foucault 1977,184) [4]. Historically, Renaissance artists rarely labeled works as self-portraits; this emerged with modern artistic self-consciousness. Twentieth-century museums codified the genre through curated exhibitions, shaping its institutional visibility. This catalog-based approach uses these classifications as data, revealing shifts in how self-portraiture is defined. A Foucauldian lens highlights that curatorial choices determine what counts as a self-portrait-e.g., a 1920s nude in a symbolic landscape might not be cataloged as such, while a 1990s video performance might later be reframed. The media expansion in Figure 4 reflects an evolving disciplinary regime, accommodating non-traditional self-portraits (Foucault 1977,192-93)[4]. Foucault's "technologies of the self" frame self-portraiture as a truth-game, where artists produce identity for public consumption, and institutions fit these into art-historical narratives (Foucault 1977, 184-85)[4]. Late-century self-portraits engaging identity politics and postcolonial themes suggest museums adapted classifications to include new forms of selfhood. Foucault underscores the power relations governing who can self-represent and how (Foucault 1977, 200)[4]. (Note: the corpus, drawn from Western collections, may underrepresent non-Western artists, a limitation for future research.)

• **Embodiment (Merleau-Ponty):** The human body, often the artist's own, remains central to self-portraiture, even when traditional likeness is abandoned. Jasper Johns's Study for Skin (1962) uses imprints of his face and torso, literally embedding the body in the image. This aligns with Merleau-Ponty's philosophy that perception and subjectivity are rooted in bodily existence, where the body is both subject and object (1962,256). Self-portraiture embodies this paradox: the artist's body creates an image of itself. Mirrors, a recurring motif from Courbet to Vivian Maier's shop-window reflections, reflect Merleau-Ponty's "mirror structure" of self-perception, where one is both seer and seen (1962,130). The data show persistent body- and face-centric terms across styles (Figure 3), suggesting that, despite abstraction or conceptual shifts, the body remains the horizon of self-awareness. Even late-century digital self-portraits, like videos of heartbeats or endurance performances, reframe rather than remove the body.

Self-Awareness in Self-Portraiture

Self-portraiture is fundamentally about self-awareness: the artist adopts a reflexive stance, at once observing and fabricating an image of the self. The Narcissus myth already encodes this reflexivity-becoming aware of oneself as image [1]. Twentieth-century artists made such awareness explicit. Whether Expressionists exposing inner angst or Conceptual artists staging the self in media environments, self-portraitists' foreground being seen. The frameworks invoked here all hinge on self-awareness: Goffman's performer anticipates an audience, Foucault's subject knows it is classified and observed, and Merleau-Ponty's embodied self apprehends itself "in the mirror of the world. "Our evidence clarifies how this awareness shifted. The 1920s surge in production (Figure 1) coincides with artists' self-consciousness as public figures; works by Otto Dix and George Grosz are pointedly performative or ironic. Surrealism's stress on mirrors and duality (Figure 3) thematizes the split between experiencing and observing selves; doubling and literal reflections comment on self-observation. Late-century examples (Warhol, Sherman) exhibit postmodern self-awareness: image as construct, commodity, or archetype. Warhol's repeated silkscreens reflect on celebrity and reproducibility; Sherman's disguises explore identity by negating it. The medium shift (Figure 4) also signals heightened reflexivity: the question of how one represents oneself-through which medium or technology-becomes part of the meaning of the work. Many late-century self-portraits contain meta-commentary on their own making or dissemination (e.g., Yasumasa Morimura's impersonations of art-historical masterpieces interrogate cultural identity and art history simultaneously, turning the self-portrait into a dialog with past images [21].

In short, self-portraiture lets artists declare who they are and query how they know it. The arc from Expressionist sincerity to postmodern irony brings self-awareness to the foreground. Early introspection was often presented "straight"; by century's end, mirrors, cameras, and alter egos routinely disclose the artist examining their own construction. As modern and postmodern sensibilities advanced, the self was understood less as given than as made [22]. Self-portraits thus record the evolving consciousness of selfhood and sustain a distinctive doubleness: they show the artist-and the artist's awareness of being an image.

Identity Politics and Postcolonial Vectors

Late 20th-century self-portraiture saw a surge in identity politics and postcolonial perspectives, evident in the data (keywords in Figure 3, medium shift in Figure 4) and art historical trends. From the 1970s, feminist, queer, and postcolonial artists used self-portraiture to assert marginalized identities, often through photography and performance for their subversive, indexical power. Carrie Mae Weems's Slow Fade to Black series places her in historically charged scenarios, while Yasumasa Morimura's photographic impersonations of Western icons critique cultural appropriation. Keywords like diaspora, creole, and mestizo (Figure 3) align with the rise of photography and installation (Figure 4), enabling new identity statements. Feminist and queer artists, such as Kiki Smith blending human and animal forms or Shirin Neshat inscribing Persian calligraphy on her face, challenge traditional representation, echoing Donna Haraway's hybrid, cyborg identities [23]. Afro-diasporic artists like Wifredo Lam use ancestral imagery (e.g., orisha) to redefine the self beyond Western norms. Self-portraiture became a political act, asserting intersectional identities-female, indigenous, diasporic, queer. While the data show institutions cataloging these works, expanding beyond Anglo-American collections could reveal further diverse timelines and themes.

What the Catalogue Shows

Museum catalogues, shaped by curatorial choices, are not neutral but offer a longitudinal view of artistic practices' visibility, reflecting production and institutional recognition. The 1940s dip in self-portraits may reflect reduced creation or acquisition

due to war, while the late-century bosom aligns with increased production and collecting of identity-focused works. This study reads these records both with and against the grain, using data to highlight trends while questioning context. A limitation is undercounting implicit self-portraits, like Duchamp's Rose Selvy photos or untagged performance works, due to metadata framing. This "indexical" blind spot means data capture institutions deemed noteworthy, revealing the evolving self-portraiture canon. By century's end, self-portraits became prominent, especially for identity issues. Quantitative analysis clarifies shifts in subject matter, media, and display, complemented by close readings for qualitative sense, showing synergy of data-driven and humanistic approaches.

Limitations, Validation, and Reproducibility

Sampling frame (institutional visibility) The corpus aggregates three large Anglo-American collections (Metropolitan Museum, Tate, MoMA), introducing collection-history biases. Regions (e.g., Asia, Africa) and modes (e.g., ephemeral performance not collected) are underrepresented. To mitigate single-institution effects, analysis confirmed that major inflections (peaks/troughs) recur in each collection. Nonetheless, the sample indexes institutional visibility, not absolute creation; uncatalogued or privately held works lie outside scope (see Note [1]). Findings therefore pertain to the domains these institutions encompass; expanding to additional (especially non-Western) collections would improve representativeness.

Dating and binning Midpoint years were used for ranges and decade bins. Although this is a simplification (especially for broad spans like "c. 1940-1955"), alternative binning (e.g., 5-year groups) preserves the interwar rise, 1940s dip, and 1980s apex. Because 2000 anchors the last bin without a full decade, any late-1990s downturn should be read cautiously; overall temporal patterns are robust to minor adjustments.

Self-portrait detection Identification relied on explicit title/subject keywords-conservative by design-so implicit cases may be missed (e.g., Portrait of the Artist as X without "self-portrait"), as may some conceptual/performance works. Relaxing filters (e.g., scanning descriptions for "the artist depicted himself") modestly increases counts but does not change curve shape. A few non-standard items (e.g., ironically titled works) may appear but are negligible. Future work could combine metadata with computer vision or manual curation to capture implicit self-portraits.

Medium classification Rule-based mapping collapses complex descriptions to a single class, prioritizing explicit cues (any "video" → Video/Digital). Some hybrids may be misclassified, and broad classes compress nuance (e.g., oils with watercolors; analog with digital prints). Stress tests (excluding "mixed media" or inverting precedence) leave the 1990s photography-over-painting crossover intact. Finer taxonomies (e.g., analog vs. digital photography) lie beyond scope but merit future analysis.

Theme assignment Expressionist labels (Figure 2) combine keyword rules with human adjudication; subjectivity remains. A codebook and examples were released for transparency. Ideally, multi-coder reliability would be reported; here, a single coder applied a precedence rule (trauma/death over identity) to avoid overusing the broad "identity" label-possibly understating identity's share. Takeaway: identity is central, but war and existential dread are also prominent. Categories could be refined or extended to other movements.

Token analysis (Surrealism) Figure 3 depends on available text; some entries have only titles. This analysis was supplemented with a brief literature-derived list for key artists, focusing on established thematic terms to limit bias. Proper names were removed to avoid tautologies; linguistic variants were merged (see Data & Methods). The word cloud is a heuristic, not a precise metric; prolific artists can weigh the aggregate, though in the sample no single author dominates. The goal is to surface recurring motifs, not rank terms. The underlying frequency table is provided for alternative visualizations.

Reproducibility All CSV data and code for Figures 1-4 are supplied. The pipeline-from snapshotting raw museum data to final plots-is fully documented, enabling exact regeneration (software differences aside) and parameter testing (e.g., redefining Surrealism or adding museums). This transparency is intended to support cumulative, scrutinizable, and non–black-box work in computational art history.

Conclusion

This study treats museum catalogues as visual data to analyze how twentieth-century artists imaged the self across media, revealing four key patterns:

Crisis Sensitivity: Self-portrait production peaks in liberal, introspective periods (1920s, 1980s) and dips during wartime disruptions (1940s), indicating that self-portraiture—an act of reflection-thrives in stable or culturally dynamic times, though institutional preservation also shapes visibility (Figure 1).

Expressionist Themes: Expressionist and New Objectivity self-portraits stress identity and self-awareness yet bear war trauma and existential anxiety, mirroring collective crises and corresponding to psychological theories of the era (Figure 2).

Surrealist Motifs: Surrealist self-portraits center on mirror, body, dream, and hybridity, integrating diasporic and ritual imagery to move beyond European psychic interiority and expand self-awareness toward non-Western and feminist identities (Figure 3).

Medium Shift: By the 1990s, photography and installation overtake painting, with video/digital emerging-affirming art's "dematerialization" and the new media's role in self-representation and self-awareness (Figure 4).

Methodologically, metadata-driven analysis complements close interpretation, using quantitative trends to avoid anecdotal bias and ground findings in art-historical context. This integrative approach highlights phenomena (e.g., the 1980s peak tied to identity politics) and explains them through theory. Self-portraiture emerges as a flexible, self-reflexive strategy for interrogating selfhood, adapting to technological and cultural shifts rather than remaining a static genre. Thus, self-portraits occupy the intersection of biography, media, and social history as reflections of artists' evolving self-awareness.

For museums, consistent metadata tagging across media ensures self-portraiture's visibility as an index of artists' changing self-awareness. Future research could expand the corpus globally, incorporate computer vision to detect implicit self-portraits (Arnold and Tilton 2019; Manovich 2020, 93, 231), analyse demographic trends (e.g., female artists), or extend into the 21st century to explore digital self-imaging and its implications for artistic self-awareness [11,12]. Sharing data and code fosters an open, cumulative approach to digital art history [24,31].

Notes

[1] The corpus covers catalogued, digitized objects; uncatalogued studio works or private collections are excluded. Thus, self-portraits not in major collections or publications are absent-a common limit in museum studies.

[2] Decade bins use floor(year/10) *10. For 1900-2000, 2000 anchors the last bin but isn't a full decade; note this boundary when viewing the minor 1990s-2000 drop.

[3] Expressionist themes assign one primary per record; ambiguous cases prioritize trauma/death over identity to prevent overusing the broad "identity" label. This ensures historical themes aren't overshadowed.

[4] Surrealist tokens exclude proper names to avoid tautology (e.g., "Dalí"). Synonymous variants are collapsed (e.g., orishas → orisha) for unified counts. This sacrifices nuance (e.g., gendered "mask" terms) but highlights key themes.

[5] Processing decisions (regex, medium hierarchy, stop words, etc.) are documented in code for adjustment/reuse. Readers can alter parameters, re-run analyses, and test scenarios, promoting transparency and reproducibility.

Data and Materials Availability

Corpus dataset: self_portraits_1900_2000_merged.csv – CSV file with 394 records (fields: museum, title, artist, year, medium, country, movement, keywords, URL). Master dataset merged from three museums, cleaned and deduplicated.

Figure data tables: Processed tables for figures. Examples: figure4_media_usage_1960s_2000s.csv (decade counts per media category for Figure 4), figure3_surrealismsurrealism_keyword (top tokens with counts for Surrealist self-portraits in Figure 3).

Analysis scripts: Released Python and MATLAB code. Key ones: Python notebook for cleaning/tokenization, self_portrait_analysis.m for plotting, Python script for media trends. Scripts commented for easy modification.

Reproducibility: Regenerate Figures 1-4 from CSVs without APIs/databases, ensuring access despite changes. Materials for non-commercial use (CC0 data, open-source code). Encourage extensions and reports for cumulative digital art history.

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14. Figure 1. Self-portrait production by decade (1900-2000). Decadal counts from harmonized Met/Tate/MoMA records, shown as timeline. Multilingual stems identified self-portraits. Shaded bands mark WWI (1914–18) and WWII (1939-45), aligning with production dips.
15. Figure 2. Theme distribution in Expressionist/New Objectivity self-portraits. Movement filter isolated relevant works. Each assigned one primary theme (from five categories in text). Pie chart displays proportions (rounded to one decimal). Codebook and rules included in data for transparency.
16. Figure 3. Surrealist self-portrait keywords from metadata/literature. Tokens from titles/subjects, plus scholarship on figures (Dalí, de Chirico, Kahlo, Carrington, Lam). Text normalized/lemmatized. Visualization groups terms, showing clusters on identity, body, dream, duality, hybridity, and culture. Frequency table provided.
17. Figure 4. Media usage trends in self-portraits, 1960s–2000s. Stacked bars/areas show proportions of Painting, Photography, Installation, Video/Digital per decade (normalized to 100%). From harmonized records; media mapped via rules (see Data & Methods). Photography overtakes painting by 1990s. Video/Digital includes electronic/computer works. 2000s covers only 2000, highlighting shifts.
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