

Estimation and Iteration: An Examination of Archival Narratives in *Time Capsules* (1974) and *Today Series* (1966)

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Estimation in statistical theory is the inference of unknown parameters from sample data, while iteration is the process of refining estimates through successive updates.¹ In art history, estimation and iteration can facilitate archive digitization and completeness *vis-à-vis* fragmented primary sources and unrefined attributions. The systematic documentation of time has long since been a preoccupation of artists, who seek to capture the essence of moments, preserve the past, and reflect upon the fluidity of identity. Yet, insofar as the process remains dependent on distinct informational conditions, the immutability of relative ignorance and epistemic overload often render such attempts incomprehensive and unreliable. While the empiricist theories of estimation and iteration acknowledge such shortcomings and provide partial solutions towards the reconstruction of coherent narratives, the inextricability between reality and emotion convolutes such thematics, and reasserts the importance of subjective perception. By surpassing its ontological identity as an internal cognitive process, emotive perception complements the inadequacies of empiricism, and unites humanity in its journey of remembrance.

Through the systematic documentation of days in a particular period, Andy Warhol's *Time Capsules* and On Kawara's *Today Series* have complicated the process through which the past is preserved. I argue that the two works respectively mirror the ontological positions and corresponding limitations of estimation and iteration:

while *Time Capsules* hinders the assertion of an objective archival narrative through the inclusion of superfluous contextual detail, *Today Series* preempts the comprehensive articulation of the past through the depletion of mnemonic content. While such thematics engage with and evince the doctrinal limitations of statistical empiricism, this essay suggests that the two works exemplify the fluidity of identity through their compositional content and creative processes, shedding light on the interconnectedness of human experience. *Time Capsules* and *Today Series* thus call into question the significance of history and memory *vis-à-vis* the individual and collective journey through time.

In statistical theory, estimation refers to the process of approximating parameter values based on a large set of empirical data possessing a random component.² The parameters describe an underlying physical or temporal setting which varies the distribution of the measured data.³ As the estimator approximates the unknown parameters based on the empirical evidence, the underlying relations of the data are derived from an excess of informational conditions.⁴ In the context of archival studies, estimation is employed in the conceptualization of a grand narrative from multiple dissonant accounts—based on material artifacts, and primary or secondary sources, a coherent history of the subject matter is reconstructed from these fragments of the past.⁵ To the extent that random error remains an inevitable

1 David A. Harville, "Maximum Likelihood Approaches to Variance Component Estimation and to Related Problems," *Journal of the American Statistical Association* 72, no. 358 (1977): 328–330, 332, 333, 336, 338.

2 Jan-Willem Romeijn, "Philosophy of Statistics," *Stanford Encyclopedia of Philosophy*, Stanford University, August 19, 2014.

3 Harville, "Maximum Likelihood Approaches," 328, 329, 332, 333.

4 Harville, 330, 332, 336, 338.

5 Daniel Little, "Philosophy of History," *Stanford Encyclopedia of Philosophy*, Stanford University, October 13, 2016.

phenomenon, the reliability of the estimation may be improved by enlarging the subject's dataset.⁶

Warhol's *Time Capsules* consists of six hundred meticulously preserved boxes containing a wide array of objects.⁷ The physicality and materiality of the boxes create a sense of order and containment; although the boxes vary in material and size, their regular shape suggests a systematic organization where each box is a time capsule in itself.⁸ Each box is a unique iteration of the series conceived within the same conceptual framework, the repetition and serialization of which are characteristic of Warhol's oeuvre.⁹ In this, *Time Capsules* echoes the artist's interest in mass production and material culture, as well as his interest in blurring the boundaries between art and life.¹⁰ Yet contrasting with the formal structure of the boxes is the chaotic arrangement of their content, materializing the tension between order and disorder.¹¹ With an eclectic range of objects arranged in a seemingly haphazard manner (Fig. 1), the boxes create a visual cacophony that reflects Warhol's prevailing fascination with the banal and his penchant for collecting.¹² Thus, *Time Capsules* is also Warhol's ongoing performance; as his meticulous collection and archiving of objects become an integral part of the creation, the boxes serve as containers of memory that preserve fragments of the artist's life and the cultural milieu of his time.¹³

In its inclusion of superfluous contextual detail, Warhol's *Time Capsules* mirrors the ontological position of estimation. Spanning over twenty years, the collection may be conceptualized as a sufficiently large data set documenting the progress of Warhol's personal life, with each box representing a distinct datum constituting the totality of the grand narrative.¹⁴ While the temporal parameters of assembling each box are standardized and



Figure 1

Andy Warhol, *Time Capsule 262*, 1974–1987. Mixed media, dimensions variable. The Andy Warhol Museum, Pittsburgh, PA. Image courtesy of the Art Law Foundation.

periodic, the contents of each time capsule are contingent on a spatial-temporal function: odd, disparate objects in Warhol's surrounding environment at a particular point of time were thrown in as retainers of ephemera or *memento hominem*, without any evidence of evaluative editing. As the project progressed, Warhol became emboldened to actively collect and archive objects of historical importance rather than passively accept unwanted matter. The result is a confusing assemblage of objects seemingly devoid of a dominant narrative, which resembles the initial conditions of an estimation study.

At first glance, the chaotic nature starkly contrasts with the scientific precision of statistical inference; however, this very element establishes a striking parallel between *Time Capsules* and estimation theory. The random assembly of the box contents mirrors the probabilistic assumption underlying all subject variables

⁶ Little, "Philosophy of History."

⁷ Christopher Schmidt, "Warhol's Problem Project: The Time Capsules," *Postmodern Culture* 26, no. 1 (September 2015): 3.

⁸ Schmidt, "Warhol's Problem Project: The Time Capsules," 14.

⁹ Schmidt, 9.

¹⁰ Schmidt, 22.

¹¹ Schmidt, 10.

¹² Schmidt, 14.

¹³ Schmidt, 2.

¹⁴ Schmidt, 9.

in estimation studies. One could argue that Warhol's deliberate efforts to acquire specific objects for *Time Capsules* contradict this idea, yet this inconsistent collection of archival criteria can also be conceptualized as an elevated form of randomness per se. This argument is bolstered by the artist's conflicting theories at different points in his career—in *The Philosophy of Andy Warhol* (1975), Warhol extensively describes the project as a form of aestheticized storage, while asserting in his posthumous *Andy Warhol Diaries* (1989) that *Time Capsules* was intended to be seen as a curated historical archive rather than a chance-based sculpture.¹⁵ Thus, despite surrounding disorganization regarding its physical contents and interpretative discourse, *Time Capsules* affirms the ontological aspect of random distribution inherent to estimation processes.

The unique conditions of *Time Capsules* have complicated the process through which Warhol's past is preserved. Given its scale and purported lack of overarching logic, the contents of *Time Capsules* necessitate estimation as the only means to reconstruct Warhol's past.¹⁶ In conventional archival contexts, reliable estimation is premised on a large, undisturbed dataset from which a statistical mean may be derived.¹⁷ Conceived in this light, superfluous contextual detail is integral towards deriving the underlying order as the aggregate of each distinct item constitutes the entire dataset.

Nonetheless, the same proposition has also endowed *Time Capsules* with a randomized, archival element, representing its malleable status as both history and art.¹⁸ This position distorts the elegance of the initial formulation; although nominally available for scholarly research, the bewildering diversity of its contents has restricted access due to its putative artistic identity.¹⁹ The

sealed impermeability of each box prevents simultaneous access to the entire collection while attempts to archive its temporally-displaced contents compromise their physical integrity.²⁰ These propositions have rendered a reliable estimation of Warhol's past impossible and degraded the inferential value of each individual box. Instead of enunciating a particular organizational order, an isolated box becomes meaningless when it contains randomly assembled items. Given that preserving the past partly relies on reconstructing and organizing a coherent historical narrative, this endeavor's failure is pronounced by distinguishing mere past ephemera from records of documentary significance being impossible.²¹

Here, one might note the similarities and differences between *Time Capsules* and Gerhard Richter's *Atlas* (1962–ongoing) (Fig. 2). The extensive collection of images in *Atlas*, intermingling war scenes with mundane everyday life, appears to parallel the scale and purported lack of organizational coherence seen in *Time Capsules*.²² However, the way these projects are exhibited differs significantly; while *Time Capsules* had limited accessibility, *Atlas* presented its entire collection all at once.²³ These conditions provided a large and undisturbed dataset for discerning the overarching narrative of war from *Atlas* through estimation, something that is rendered impossible in *Time Capsules*. Thus, while including superfluous detail has made estimation the sole epistemological means for forming a reliable account of Warhol's past within *Time Capsules*, it has also imposed limitations on this method's application and ultimately frustrated attempts to preserve history.

Where estimation is employed under an excess of informational conditions, iteration is employed to generate an outcome under insufficiency.²⁴ In epistemic theory, iteration is defined by its continuous but quantized

¹⁵ Schmidt, 4, 5, 8.

¹⁶ Starlee Kine, "Act 2: Your Junk In a Box," in the episode "Thought That Counts," *This American Life* (podcast), December 20, 2013.

¹⁷ Romeijn, "Philosophy of Statistics."

¹⁸ Schmidt, 12, 16.

¹⁹ Schmidt, 12, 16.

²⁰ Schmidt, 6, 9.

²¹ Little, "Philosophy of History."

²² Benjamin Buchloh, "Gerhard Richter's 'Atlas': The Anomic Archive," *October* 88 (Spring 1999): 141–43.

²³ Schmidt, 3; Buchloh, "Gerhard Richter's Atlas," 118, 131.

²⁴ Rasmus Rendsvig and John Symons, "Epistemic Logic," *Stanford Encyclopedia of Philosophy*, Stanford University, June 7, 2019.

process—each iteration is distinct, and followed directly by the subsequent iteration.²⁵ Contrary to recursion, whereby prior knowledge concerning the cycles of repetition is unnecessary, successful iteration is contingent upon input foreknowledge in relation to the parameters of the entire iterative loop.²⁶ In terms of the preservation of the past, iteration enables the recollection of specificities where contextual detail is inadequate, particularly in the context of decoding esoteric customs or dead languages.²⁷ Nevertheless, the iterative process requires, as a starting point, some degree of reference to circumstantial knowledge external to the closed epistemic system.²⁸

Yet these limitations in preserving the past are central to *Time Capsules*' exploration of the fleeting self, also reflecting the cultural landscape in which Warhol operated. Each box's contexts are "selected" through Warhol's daily experiences, uncovering different aspects of his evolving identity.²⁹ Similar to how Warhol often blurred the lines between his public and private selves, the objects act as snapshots that capture his relationships, interests, and professional practice contexts.³⁰ While these items were once significant to Warhol, their importance may have diminished over time; thus, the objects in *Time Capsules* serve as tangible reminders of personal transformation and erosion.³¹ Reinforcing these ideas is the adaptable nature of artistic identity and authorship—traditional aesthetic theory venerates the artist as the sole creative genius; however, *Time Capsules* challenges this notion by incorporating items formerly owned by Warhol's acquaintances that make them contributors to this extensive collection.³² Through integrating diverse objects and inputs from others, *Time Capsules* implies that identity is shaped by a complex web

of interactions rather than solely belonging to an individual.

In contrast to the randomized nature of Warhol's Time Capsules, On Kawara's *Today Series* is distinctly rigid in its artistic rendition of time. A collection of artworks created by the artist between 1966 and 2013, *Today Series* consists of "date paintings"—canvases with the date of creation meticulously painted in white against a solid-coloured background. The consistent format of *Today Series* conveys a sense of visual cohesion—each painting features only the date of its creation, hand-painted in bold, sans-serif typography on a monochromatic background (Fig. 3).³³ The precise brushstrokes and careful execution reflect the artist's deliberate adherence to a specific style and contribute to an overall internationality; this ritualistic aspect is further expounded upon through the creation of a new painting each day, which contemplates the transience of existence and the human desire to mark each passing moment.³⁴ As the colors of the background vary from canvas to canvas, the vibrant primary hues morph to more subdued tones reflecting the artist's emotional state or the prevailing cultural and political climate during which the piece was created.³⁵ By stripping away representative content from its composition, the date paintings draw attention directly to the passing of time itself, reinforced by the center position of the date and the uniform size of each iteration.³⁶

Both the creative process and visual composition of Kawara's *Today Series* mirror the ontological position of iteration and its notional shortcomings. Rendered as a date drawn against a dark background, each painting

25 Rendsvig and Symons, "Epistemic Logic."

26 Andrea Cantini and Riccardo Bruni, "Paradoxes and Contemporary Logic," *Stanford Encyclopedia of Philosophy*, Stanford University, February 22, 2017; Rendsvig and Symons, "Epistemic Logic," June 7, 2019.

27 Sterling P. Lamprecht, "Philosophy of History," *The Journal of Philosophy* 33, no. 8 (1936): 197–204.

28 Rendsvig and Symons, "Epistemic Logic."

29 Schmidt, 14.

30 Schmidt, 14.

31 Schmidt, 14.

32 Schmidt, 4, 14.

33 Anne Rorimer, "The Date Paintings of On Kawara," *Art Institute of Chicago Museum Studies* 17, no. 2 (1991): 121.

34 Rorimer, "The Date Paintings of On Kawara," 122.

35 Rorimer, 121, 126, 129.

36 Rorimer, 121, 122.

represents the day on which it was made, followed directly by the next one in the series.³⁷ Each date painting may be conceptualized as a distinct iteration, while the series as a whole represents an entire iterative loop. This argument is reinforced by Kawara's rigid adherence to self-imposed daily creation logic and his systematic destruction of unfinished pieces at the end of each day.³⁸ Coupled with meticulous recurrent paint application and similar typeface depicted in each piece, compositional repetition throughout mirrors intrinsic circularity within epistemic iteration.³⁹

By depleting its visual composition of mnemonic content, *Today Series* complicates the process of preserving the past. To the extent that the preservation of the past hinges on emotion,⁴⁰ the dearth of emotional language in *Today Series* renders the project woefully inadequate in this endeavor. In the absence of figurative imagery, the letters and numbers making up the date are self-sufficient and self-reflexive statements—although their informational purpose is not lost, they are also abstracted forms of a coherent visual whole.⁴¹ Each date is therefore “present” within the closed temporal-spatiality of the canvas, but offers no information about its relationship to external reality.⁴² Likewise, the unlimited variation of background shades throughout the series strips a particular hue of its explicit and symbolic associations, and preempts elicitation of subjective sentiment per color symbolism.⁴³ In contrast with *Time Capsules*, in which the excess of contextual artifacts preempts the discovery of a central narrative, *Today Series* represents the difficulties of preserving the past given insufficient contextual parameters.⁴⁴

Such conditions have established iteration as the only way by which events embedded in specific points in the past may be remembered to a limited extent, while also requiring a reference to external reality as a starting point of the process.⁴⁵ In this vein, each date painting is accompanied by its respective day's newspaper from the city where the work was painted, “[accentuating] the dichotomy between art and everyday actuality while simultaneously linking them together.”⁴⁶ Unlike the occasional inclusion of newspapers or other temporal gauges in *Time Capsules* for their shock value, the newspaper fragments in *Today Series* serve a distinct but cross-referencing function.⁴⁷ Although constituting the totality of a date painting, it is not part of its subject matter; rather, it functions as a “temporal gauge of ongoing daily reality” within its non-art realm.⁴⁸ These characteristics provide objective geographical-temporal information in preserving past events and serve as input foreknowledge for this iterative loop's parameters.

Despite this, the proposition only represents the perceptual reality from a particular newspaper's point of view, and is necessarily specific to the emotive memory of an individual viewer. This sheds light on the limitations of iteration as an epistemic process—given its reliance on the inclusion of external circumstantial knowledge, the breadth and depth of iteration results are necessarily dependent on the nature of their input.⁴⁹ The position contrasts markedly with the assemblage of objects in *Time Capsules*—while subjective temporal recollections are preempted in *Today Series* per the input of an objective bystander in the form of a dated newspaper, *Time Capsules* offer only Warhol's subjective account given his

37 Rorimer, 121–22.

38 Rorimer, 121–22.

39 Jennifer Rhee, “Time Embodied: The Lived Body in On Kawara's ‘Date Paintings,’” *Thresholds*, no. 31 (2006): 110–13.

40 Sarah Tarlow, “The Archaeology of Emotion and Affect,” *Annual Review of Anthropology* 41 (2012): 169–85.

41 Rorimer, “The Date Paintings of On Kawara,” 123–26.

42 Rorimer, 123–26.

43 Rorimer, 127.

44 “Act 2: Your Junk In a Box,” Podcast (December 20, 2013)

45 Rendsvig, Rasmus, and Symons. “Epistemic Logic,” June 7, 2019.

46 Rorimer, “The Date Paintings of On Kawara,” 129.

47 John W. Smith, “Saving Time: Andy Warhol's Time Capsules,” *Art Documentation: Journal of the Art Libraries Society of North America* 20, no. 1 (2001): 9.

48 Rorimer, “The Date Paintings of On Kawara,” 131.

49 Rorimer, 131.

solitary effort and organizational logic in gathering the boxed items.⁵⁰ Thus, even where the iterative process of *Today Series* illuminates to some degree the objective preservation of the past, it is also an incomplete account in that the elicitation of subjective emotive memory is severely restricted by its visual composition.

This formulation both parallels and contrasts with Aby Warburg's *Mnemosyne Atlas* (1929). Composed entirely of photographs of artworks (Fig. 4), *Mnemosyne Atlas* mirrors the inclusion of newspaper in *Today Series* in its evocation of a shared cultural memory. Yet the roles of photo and newspaper in the two works contrast with each other: while newspapers in *Today Series* have a non-art status, the photographs in *Mnemosyne Atlas* not only form part of the artwork—as was the case for temporal gauges in *Time Capsules*—but constitute the subject of the artwork itself.⁵¹ Most importantly, the act of taking photos of *particular* works of art indicates a greater degree of intent than the passive collection of newspapers, the latter which was entirely based on the geographical-temporal conditions of a date painting's creation.⁵² Apart from its apparently objective account of cultural history, *Mnemosyne Atlas* also exhibits Warburg's subjective conceptualisation of his version of European civilisation. Hence, while both newspapers in *Today Series* and photographs in *Mnemosyne Atlas* serve mnemonic functions, their purported subjectivity or objectivity is necessarily differentiated upon their incorporation processes.

Yet the dearth of mnemonic content in the composition and creative process of *Today Series* exemplifies the fluidity of identity and the interconnectedness of human experience. Much like how *Time Capsules* incorporate input from Warhol's acquaintances, the date paintings encompass dates from global locations as a universal metatag; in highlighting

our collective nature within time, the series suggests that individual identities are part of a larger human tapestry.⁵³ The highly systematic and impersonal renderings interrogate the temporal process of identity construction, which mirrors *Time Capsules*' challenge to the artist's perpetual, individual genius.⁵⁴ Conceived against On Kawara's enigmatic and elusive public presence, the artist's mechanical, disciplined production of *Today Series* underscores the impermanence of the individual and the ephemerality of human existence, as is relayed in the faded significance of mementos in *Time Capsules*.⁵⁵ Each distinct iteration of the date paintings anchors identity within specific moments in time, suggesting that time perpetually informs one's understanding of themselves.⁵⁶

In the systematic documentation of days in a particular period, *Time Capsules* has hindered the assertion of an objective archival narrative through the inclusion of superfluous contextual detail, while *Today Series* has preempted the comprehensive articulation of the past through the depletion of mnemonic content. The invocation of estimation and iteration in the two pieces complicate the process through which the past is preserved. Where memory remains inextricable from emotive experience, an acknowledgement of the intrinsic subjectivity in preservation complements the epistemic inadequacies of empiricism, and emancipates humanity from the cruelty of oblivion. Such paradigms reflected in the two works' compositional content and creative process, reminding us of the interconnectedness of human experience, the fluid nature of identity, and how time is ultimately inextricable from its emotive connections. Ultimately, "it is the time that you have spent on your rose that makes your rose so important."⁵⁷

50 Smith, "Saving Time," 8, 10.

51 Rorimer, "The Date Paintings of On Kawara," 127–28; Claudia Wedepohl, "Mnemonics, Mneme And Mnemosyne. Aby Warburg's Theory Of Memory," *Bruniana & Campanelliana* 20, No. 2 (2014): 385–402.

52 Rorimer, 126.

53 Rorimer, 129.

54 Rorimer, 120, 122, 126, 129.

55 Rorimer, 122.

56 Rorimer, 126, 129.

57 Antoine de Saint-Exupéry, *The Little Prince*, trans. Katherine Woods (New York: Reynal & Hitchcock, 1943), 48.



Above Left

Figure 2

Gerhard Richter, *Atlas*, 1962–1968. Newspaper & Album photos, 20.35 x 26.26 inches. Musée d'Art Moderne de Paris, Paris. Image courtesy of Gerhard Richter. Photo by Marc Wathieu.



Above Right

Figure 3

On Kawara, *JAN. 21, 1982*, 1982. Liquitex on canvas, 10 x 13 ½ inches. Philadelphia Museum of Art, Pennsylvania. Dia Art Foundation; Gift of One Million Years Foundation. © One Million Years Foundation. Image courtesy of Bill Jacobson Studio, New York.



Figure 4

Aby Warburg, Panel 39 of *Mnemosyne Atlas* ("Bilderatlas Mnemosyne"), 1925–1929. Mixed media (photographs, prints, newspaper clippings, handwritten annotations), 59.06 x 47.24 inches. The Warburg Institute. Image courtesy of The Warburg Institute, via Hatje Cantz.

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