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Inhabiting the Gap

INSTANTS, INTERVALS, AND CINEMATIC TIME IN ABY WARBURG'S *DER BILDERATLAS MNEMOSYNE*

FIGURE 1—Der Bilderatlas Mnemosyne *(detail; panels 25 and 39). Photos by Aby Warburg, 1925–29. Courtesy the Warburg Institute, London*

I. Prologue

AN ELEPHANT IS ELECTROCUTED IN FRONT OF OUR EYES. A TRAIN pulls to a stop at a station. A man rides a bicycle backwards. These scenes represent some of the earliest films ever shot: Thomas Edison's *Electrocuting an Elephant* (1903), the Lumière brothers' *L'Arrivée d'un train en gare de La Ciotat* (1895), and *Bicycle Trick Riding No. 2* (1899), also by Edison. The new medium awed viewers and attracted audiences willing to engage in the fantasy that the phantoms onscreen were more substantial than mere light and celluloid. Legend even has it that people ran screaming from the theater during the first showing of *L'Arrivée*. Although the legend is untrue,[1] the point it illustrates remains: early cinema was a uniquely stimulating form of entertainment, and we continue to modify and replicate it. What eludes most current-day moviegoers, however, is the part that cinema played (and continues to play) in a much larger cultural conversation about the nature and representation of time.

This essay illuminates this conversation by exploring the manifestations of cinematic time *Der Bilderatlas Mnemosyne* (the picture atlas "Mnemosyne," or memory; *fig. 1*). An archival project, *Der Bilderatlas* was started by the German art historian Aby Warburg at the beginning of the twentieth century. Warburg had a special fascination with time, and especially memory: how it was created, stored, and

passed on from one epoch to another. As a student, Warburg took an interdisciplinary approach to art history and enrolled in classes with luminaries outside his field, such as the German philologist and religious historian Hermann Usener (1834–1905), who "sought to explain myths, images, and linguistic forms in anthropological terms,"[2] and the German historian Karl Lamprecht (1856–1915), who argued that psychology has as much to do with what is seen to be historically important as an event itself.[3] He was also interested in the work of the German psychologist Richard Semon (1859–1918), who believed that memory was stored as a physical trace that could be reactivated.[4]

Thanks in large part to the influence of these three men, Warburg considered his project as an art historian to extend beyond the writing of academic texts. What was most important to Warburg was was the collection and preservation of physical documents, whose meaning would always be changeable. Kurt Forster, an art historian and former director of the Getty Research Institute, writes, "at university, Warburg had realized…that he was now witnessing far-reaching changes in historians' practice that revealed entirely different aspects of the past in light of their individual current interests."[5] In order to prepare for this, as well as to better understand the process of memory—of finding meaning in past experiences and objects—Warburg turned a lifetime habit of book collecting into the foundation of what would become the *Kunstwissenschaftliche Bibliothek Warburg* (the Warburg Library of Cultural Science) in Hamburg, Germany. Inscribed in stone above the front entrance was the word *Mnemosyne*, after the Greek goddess of memory.

Der Bilderatlas, a series of large, image-filled panels *(fig. 2)*, was an extension of this project. Warburg spent the last five years of his life—from 1925 to 1929—collecting thousands of images of paintings, buildings, sculptures, and other items that he felt were of social

FIGURE 2—*Panels from* Der Bilderatlas Mnemosyne *on display in the Warburg Library of Cultural Science in Hamburg*

significance, including postcards and newspaper clippings, which he would arrange and rearrange on the panels, accosting library visitors in search of an audience. The final form for *Der Bilderatlas* was never decided; Warburg passed away in 1929 and the images went into storage, eventually to be published in book form by the Akademie Verlag in 2000. Warburg had taken photographs of close to eighty of the panels; these are what scholars today call *Der Bilderatlas*, despite the fact that Warburg never even settled on a name.

Warburg's life bridged the late nineteenth and early twentieth centuries, a historical period that saw an expansion in available definitions of time, from Isaac Newton's atomist time, which was "absolute, true and mathematical,"[6] as well as divisible, to Albert Einstein's conclusion that "every reference body has its own particular time,"[7] or relative time. The result was not a direct transition from a belief in one to a belief in the other, but rather a carefully orchestrated juggling act in which people attempted to embrace both models at once—to simultaneously hold onto the sense of an irreversibly uniform public time even as time's more contingent and irregular tendencies were revealed.[8] While all of the arts manifested signs of this fracturing,[9] the emerging technology of cinema, with its ability to record and replay the accidental and ephemeral moments that make up daily life, not to mention control their sequence, was particularly suited to represent these tensions.

Film scholar Mary Ann Doane's concept of cinematic time, which she argues involves a particular understanding and representation of time based on the maintenance of oppositions such as past and present, rationality and contingency, and continuity and discontinuity, is instructive here.[10] As Doane explains, film reactivates in the present moment traces of actions that were recorded in the past. The early actualities—as films by Edison and the Lumière brothers were called because they recorded "actual," unplanned events[11]—were just as likely to manifest the accidental and ephemeral nature of time as they were to show "time's arrow": a film might be organized around the arrival of a train, but that same film could include an unwanted passing shadow or a sudden gust of wind carrying away some unfortunate soul's hat.

Yet film is not the only medium that can represent these tensions. Cinematic time is part technical apparatus, part conceptual. Drawing on concepts from film studies, including the cinematic technique of montage, and applying them to *Der Bilderatlas Mnemosyne*, this essay explores how spatial projects not only manifest cinematic time, but also have the potential to exploit its inherent tensions and invite viewers and participants to consciously inhabit these gaps.

II. Instants, Intervals, and Cinematic Time

> *We are on the extreme promontory of the centuries! What is the use of looking behind at the moment when we must open the mysterious shutters of the impossible? Time and Space died yesterday. We are already living in the absolute…*
>
> — F.T. MARINETTI, *THE FUTURIST MANIFESTO*, 1909[12]

THE QUESTION OF WHETHER TIME IS A SERIES OF SEPARATE, frozen micromoments (instants), or an indivisible continuum (an interval) dates back at least to the ancient Greeks. Among other things, what's at stake in this discussion is how we construct a self. If time is a series of individual, separate moments, what keeps "me" constant from moment to moment? Discoveries about the nature of time made around the turn of the twentieth century had repercussions far beyond physics. By 1909, the year that artist F.T. Marinetti declared time and space to be dead, the amount of new information available about the physical universe was dizzying—so much so that those at the van-

guard of the culture began to use words like "shock" and "trauma" to describe contemporary life.[13]

What had changed? In four words: simultaneity, instantaneity, connectivity, and subjectivity. New technologies such as the telegraph and the telephone allowed information to be shared across great distances.[14] Though pocket watches—the influence of which cannot be discounted—had existed for centuries, punch clocks and wristwatches now appeared in rapid succession. First the Prime Meridian Conference and then the International Time Conference were held, and nation after nation adopted Greenwich Mean Time. The French Bureau of Longitude began to send radio time signals at regular intervals across the Atlantic so that ships at sea could keep accurate time, and soon everyone else followed suit.[15]

Yet even in the face of such standardization, the notion that time was an absolute constant, first established in 1687 by Isaac Newton in his *Philosophae Naturalis Principia Mathmatica* (Mathematical Principals of Natural Philosophy), found itself challenged. Prior to Newton, most philosophers defined time based on motion, or on the appearance of change. Newton argued that time was a dimension, part of the fundamental structure of the universe, and that events could be sequenced within it; it "flow[ed] uniformly and [could] be divided into equal parts anywhere along the line."[16] In 1888, Albert Michelson and Edward Morley performed an experiment that provided some of the first physical evidence against Newton,[17] and from there it was a few short steps to Einstein's special and general theories of relativity (developed from 1905 to 1915) and the argument that the perception of time is relative to its system of measurement (i.e., the object perceiving it).[18]

The excitement wrought by these experiments rippled through the worlds of literature, art, and entertainment as well. Anticipation mixed with apprehension. As Doane writes, "time [was] no longer the benign phenomenon most easily grasped by the notion of flow but a troublesome and anxiety-producing entity that must be thought of in relation to management, regulation, storage, and representation."[19] In other words, feelings of connection and stimulation based on access to seemingly instantaneous or simultaneous information traveled with a set of shadowy partners: too much access was exhausting, too much information wasn't legible—regardless of whether it was the number of people on the street, the sound of voices in your ear, or the amount of light on a film negative.[20]

These conflicts seeped into philosophy as well. Discoveries surrounding the relative nature of time, as well as the physiological discovery of the afterimage,[21] added a swell of information to the debate about how we experience time. There were questions about memory storage and legibility; about whether or not was possible to achieve access to any kind of "immediate present;"[22] and, as a by-product of the last concern, about the role that contingency (accident or chance) could have in a structure in which everything that we experience is touched by our previous experiences.[23] Finally, there was the opposite question: if time was not a continuum, but a set of disparate moments defined only by its myriad observers, how was a unified, continuous experience even possible?

To prove how complicated this discourse was, consider the contemporary writings of Charles Sanders Peirce (1839–1914) and Henri Bergson (1859–1941). Peirce, a philosopher and mathematician often considered the father of *semeiotics*, stated that "any unit of time, no matter how small, will always be an interval, composed of smaller units of time."[24] Peirce denied the possibility of the instant so vehemently that he considered "what is called an 'instantaneous photograph'" to be "a composite of the effects of intervals of exposure more

numerous by far than the sands of the sea."[25] Peirce's disavowal of the photograph is telling, for despite the fact that he had a logical ground for his argument, he also had to contend with the fact that photography is an *indexical* mode of representing time. In the lexicon of Peirce's semeiotics, an indexical sign is a sign that is not just representational, but actually produced by its object.[26] By definition, what is indexed via photography—and cinema, after a fashion—has to be a frozen moment, or instant: exactly what Peirce was attempting to refute.

To further complicate matters, Peirce had to contend with the question of how contingency (chance or accident) could exist if no moment is ever independent of that which came before. His conclusion is surprising: "Yet it is undoubtedly true that the permanence of chance effects is due to the independence of moments of time. How are we to resolve this puzzle? The solution of it lies in this, that time has a point of discontinuity at the present."[27] Peirce resolved his dilemma by arguing the following: time is an indivisible continuum, or interval, and despite appearances, what is represented through photography and cinema is (still) this continuum. Yet to make room for chance, he has to allow for one actual instant: the present moment, which constitutes an "absolute break" between past and future as our consciousness experiences it.[28]

For his part, Bergson refused the instant, arguing that the perception of a thing was based in the thing itself, which we can't access without being conscious. Because of this, the very act of perception will always involve memory (the past). Bergson wrote, "There is for us nothing that is instantaneous. In all that goes by that name there is already some work of memory."[29] Time, for Bergson, was duration. When faced with Zeno's paradox of the arrow, he faulted Zeno for assuming that the arrow could ever be "at" a given point.[30] In Bergson's worldview, we seem to simultaneously trail and precede ourselves in time.[31]

Bergson's refusal to accept time as divisible and Peirce's willingness to directly contradict himself in order to embrace its divisibility are emblematic of Doane's argument regarding the structure of temporality in modernity: oppositions such as past and present, rational and contingent, continuous and discontinuous, and instant and interval were all deeply connected and aligned with each other.[32] The question of whether time is an instant or an interval may be as old as thought, but modernity found space for both beliefs. As a representational medium, cinema was particularly suited to this "discursive tension"[33] because as a series of "'instants' in time,"[34] it (literally) embodies this debate.

Film contains still images that provide us with the illusion of continuous movement when passed through a projector at a certain speed (currently we consider twenty-four frames per second to be natural). Montage—the technique by which multiple still images are joined[35]—is one way in which the technical aspects of early cinema aligned with its conceptual surroundings in its representations of time. Montage is only one of many cinematic techniques, but it embodies many of same conflicts brought on by the confusion over instant and interval. Walter Murch, perhaps the best-known film editor of the last fifty years, describes the technique as "a total and instantaneous displacement of one field of vision with another, a displacement that sometimes also entails a jump forward or backward in time as well as space."[36] For Murch, the cut between adjoining filmic images is temporal and spatial: what he calls a "discontinuity" in the field of vision, and what I will call a zone of displacement.[37] It is both a moment in time and a location, where one image is *replaced* by another—and it is here that *Der Bilderatlas* invites us.

III. Inhabiting the Gap: Aby Warburg's Der Bilderatlas Mnemosyne

> *I believe "filmic" juxtapositions are taking place in the real world …and, in fact, I would go so far as to say that these juxtapositions are not accidental mental artifacts but part of the method we use to make sense of the world. We must render… reality discontinuous, otherwise perceived reality would resemble an almost incomprehensible string of letters without word separation or punctuation.* —WALTER MURCH, *IN THE BLINK OF AN EYE*[38]

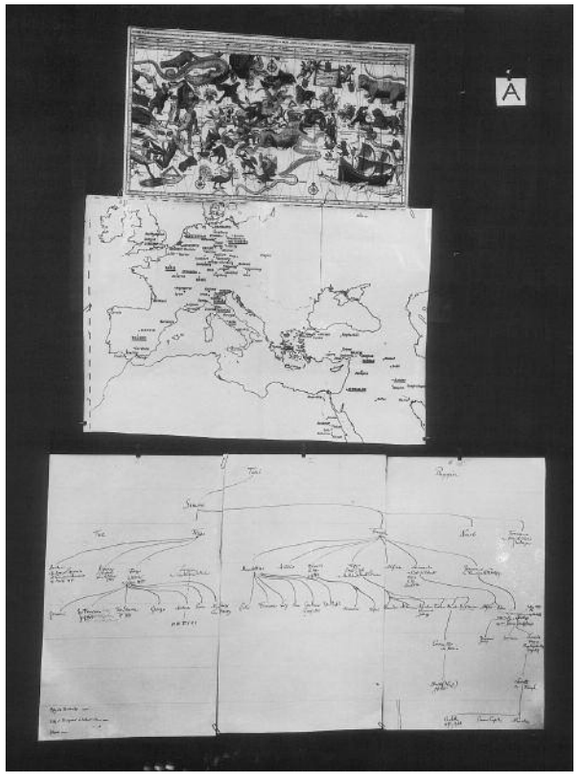
ACCORDING TO THE WARBURG FAMILY BIOGRAPHER, RON CHERNOW, Aby Warburg traded his birthright for books. The eldest of three sons, Warburg was born into a well-to-do Jewish banking family in mid-nineteenth-century Hamburg.[39] As such he should have been the one to take over the family business for his father, but on his thirteenth birthday Warburg surrendered the role to his youngest brother, Max, in exchange for the promise that "Max would buy him all the books he ever wanted."[40] Warburg chose the life of a scholar, and wound up influencing not just the intellectual trajectory of art history, but also the methods by which it is practiced.[41] Despite the tense political situation in Germany in the early twentieth century, not to mention Warburg's often trying behavior,[42] Max kept his promise; by 1914, Warburg had amassed somewhere in the vicinity of 15,000 volumes, most of which were related to history, art, psychology, and religion. These volumes became the *Kunstwissenschaftliche Bibliothek Warburg*—a research institute that attracted scholars from all over Europe and America and is now known as the Warburg Institute,[43] one of the more important art historical think tanks of the past century.[44]

Warburg's interdisciplinary and cross-genre tendencies, as well as his interest in studying contemporaneous and non-art images, confounded many of his colleagues, most of whom chose to ignore or marginalize his efforts. Warburg drew from linguistics, astrology, astronomy, art history, and psychology, among other disciplines. He had a reputation for maintaining one of the most technologically advanced libraries in Germany, replete with pneumatic tubes and slide projectors.[45] Given his penchant for technology, the fact that he was part of the first generation to witness the birth of cinema, not to mention his self-proclaimed investment in what he called "the iconology of the interval"[46]—the idea that meaning is born in the relationships between things and not the things themselves[47]—it's not a far reach to argue that cinematic time is present in Warburg's projects, even before we specifically consider *Der Bilderatlas*.

The idea for *Der Bilderatlas* came from Warburg's assistant, Fritz Saxl, who gifted Warburg with the wooden frames that were to become the project's first "pages." They were "large…like standing blackboards, across which [Saxl] had stretched black hessian [burlap]."[48] Warburg pinned his images to these panels, shuffling and reshuffling them in relationship to each other as he attempted to visually trace the history of various gestures and motifs. Warburg had just returned to Hamburg after a period of institutionalization in Kreuzlingen, Switzerland, which he'd begun right after World War I.[49] His psychiatrist, Ludwig Binswanger, agreed to release him back into the custody of his family and friends after watching him prepare and deliver the now famous Kreuzlingen lecture, in which he compared ancient Greek rituals to contemporary Native American rituals that he'd researched on a trip to the America southwest in the late 1800s.[50]

Der Bilderatlas was supposed to pick up where the Kreuzlingen lecture left off by comparing images from as many cultures and times periods as possible and looking for certain gestures or symbols that had been "transmitted."[51] Photographs of the images could be fixed

FIGURE 3—*Panel A from* Der Bilderatlas Mnemosyne. *Photos by Aby Warburg, 1925–29. Courtesy the Warburg Institute, London*



with pins on the cloth, and easily moved whenever Warburg wanted to alter their position.[52] Warburg spent the last five years of his life obsessively working on *Der Bilderatlas*. It was a daily, ritualistic practice, and he disliked having this schedule varied.[53] In this way, *Der Bilderatlas Mnemosyne* literally manifests the tension between the instant and the interval: while he was alive, Warburg could not stop shuffling through the images, but after his death, the panels of *Der Bilderatlas* are available to us only as a series of stills, or traces of his thought process, stopped at a particular point.

The content of *Der Bilderatlas* is itself a story of the awkward relationship between the past and the present. As an art historian, the issue that most concerned Warburg was "the reappearance of forms from antique art [meaning Greek antiquity] in later times."[54] It was Warburg's intent that they be, among other things, "a picture atlas of visual expression in the Mediterranean," a way of proving "the classical origin" of "seemingly unclassical" gestures, and a visual investigation of "the role of the coining of images as a process of civilization."[55] I use the word "awkward" because despite his conviction that certain images and gestures lasted across centuries (he used phrases like "transmission" and "survival"), he seemed to be continually conflicted about how or why. In writing about the images that make up *Der Bilderatlas*, he asked with regard to the verbal and pictorial expressions that he traced across time: "are there laws to govern their formation or reemergence?"[56]

A photograph of one of *Der Bilderatlas*'s preliminary panels, Panel A *(fig. 3)*, suggests that Warburg situated the project within three discourses that might provide such laws. Warburg titled the panel V*erschiedene Systeme von Relationen, in die der Mensch eingestellt ist, kosmisch, irdisch, genealogisch,* or *Various systems of relations in which man is set, cosmologically, terrestrially, genealogically*. The images form

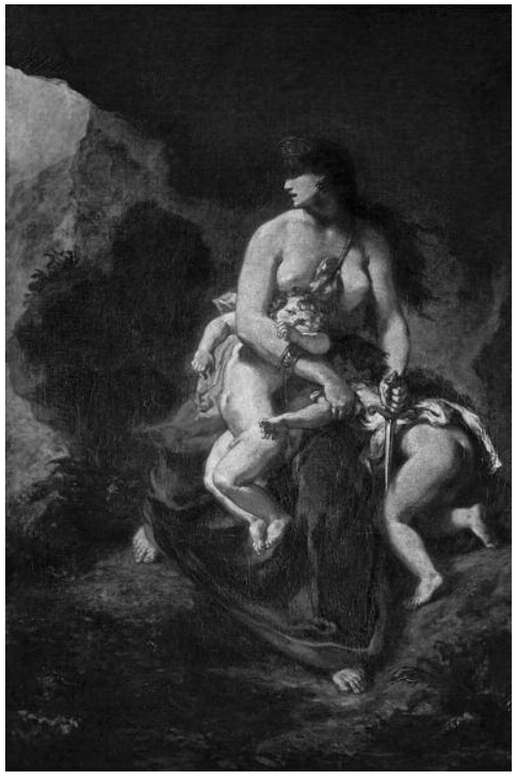
a vertical column on the panel; at the top is a map of the sky (*Star Chart*, by Remmet Theunisse Backer, 1709), the central image, titled *Cultural Exchange North/South/East/West*, created by Warburg, is a simple outline of the countries that surround the Mediterranean Sea, and the third (at the base of the column), a fluid series of branches inked on a series of three portrait-style sheets of paper, quickly recognizable as a Medici family tree. With Plate A, Warburg locates his project, immediately directing our attention to several structures and systems in which humanity is enmeshed: cosmological, mercantile, genealogical, and territorial.

But *Der Bilderatlas* gives no real solution; in many ways, Panel A is atypical. Most of the panels contain more images, and most are not maps, but rather details of sculptures, paintings, architectural monuments, newspaper advertisements, photographs of rituals, postcards, and even stamps—some recognizable and some not—all separated from each other by small gap of black negative space. Although we can trace a visual coherence and begin to map out relationships between images, decoding the panels is difficult, especially without access to Warburg's writings. Because Warburg never finished *Der Bilderatlas*, all that remains of it are the photographs he took of certain panels and aphorisms that have been interpreted to be 'titles.' Even with the titles, however, establishing coherency is a challenge.

Panel 77 *(fig. 4)*, for example, contains gestures of extension or of constriction, possibly based on the two Eugène Delacroix paintings in the upper left corner: *Medea* (1838; *fig. 5*), and *The Massacre at Chios* (1824). The gestures are disturbing: Medea's sword at the throats of her children and the taut spiral of a child and his mother, at whose possibly dead, bare breast he gropes—even pinches—as he suckles at her stomach (there is also a detail of the mother and child pinned below the image of the painting). Medea's gesture of restrained vio-

FIGURE 4—*Panel 77 from* Der Bilderatlas Mnemosyne. *Photos by Aby Warburg, 1925–29. Courtesy the Warburg Institute, London*

FIGURE 5—*Eugène Delacroix,* Medea, *1838, oil on canvas, 48¼ x 33¼ in. Collection of the Louvre, Paris*



lence is a formal counterpoint to the raised golf club held by the figure to her right *(fig. 6)*. There are more echoes of these gestures throughout the panel, from the outstretched arms of a Nike figure *(fig. 7)*, to a pointing charioteer on a Syracusan coin *(fig. 8)*. While it is obvious that Warburg was thinking through the movement of these gestures in time, and perhaps it could be extrapolated that he was also working through the idea of some sort of contemporary inversion in or imbalance of national power (e.g., through the images of a mother killing her children, or a child feeding from a dead parent), ultimately the meaning is where Warburg left it: in his journals (published as *Tagebuch der KBW*), in the spaces between *Der Bilderatlas*'s images, and between him and his audience.

As Philippe-Alain Michaud, Film Curator at the Musée national d'art moderne-Centre Georges Pompidou and author of the text *Aby Warburg and the Image in Motion*, has written, *Der Bilderatlas* finds its "expressive significance only when considered in an arrangement of complex interconnections."[57] Whether Michaud means by this the connections between the images themselves or between *Der Bilderatlas* and Warburg's other projects and writings is not clear, but this could also be said to be true about even the most unified and coherent of works. The mystery of *Der Bilderatlas* is in how it foregrounds the fracturing and fragmenting of its images, something that Warburg's part-time lover and assistant Gertrud Bing astutely mentions in a 1965 article published on the anniversary of his death: "One is drawn to the conclusion that Warburg's work has become so consequential because it was left as a fragment, with the fragment's power of testifying to a larger edifice and of challenging the imagination to supplement its details."[58] Yet *Der Bilderatlas* is more than a series of fragments—the spaces between the images are equally important.

FIGURE 6—*A German newspaper clipping, ca. 1920. Detail from Aby Warburg's* Der Bilderatlas Mnemosyne, *1925–29. Courtesy the Warburg Institute, London*

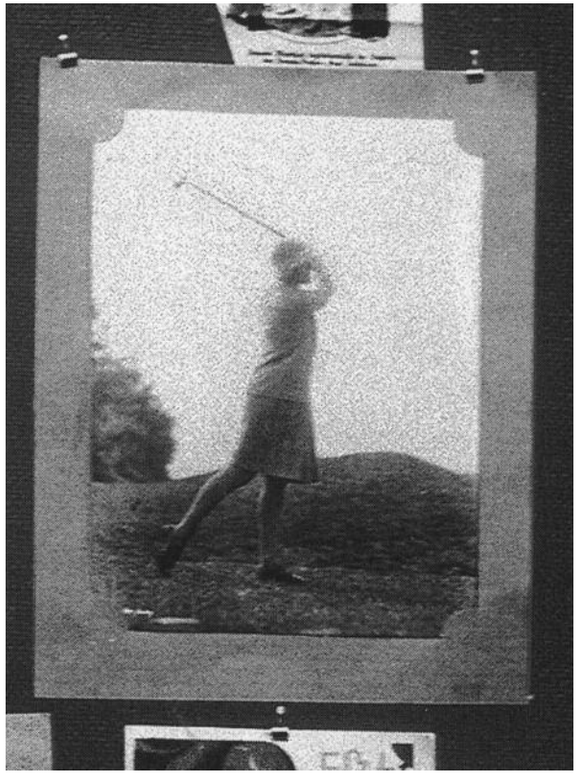
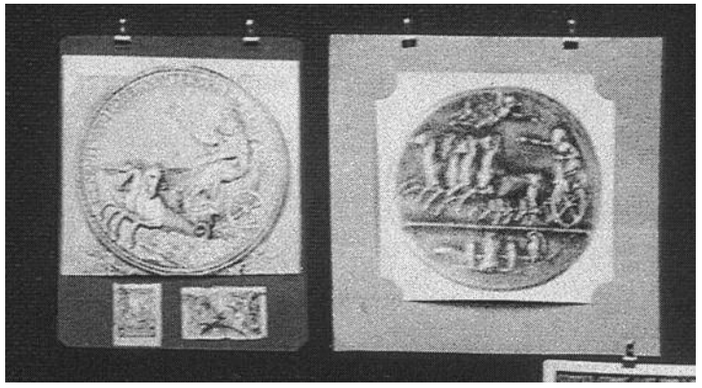


FIGURE 7—*A German toilet paper advertisement, ca. 1920. Detail from Aby Warburg's* Der Bilderatlas Mnemosyne, *1925–29. Courtesy the Warburg Institute, London*

FIGURE 8—*An image of an undated Syracusan coin. Detail from Aby Warburg's* Der Bilderatlas Mnemosyne, *1925–29. Courtesy the Warburg Institute, London*



Warburg, engaging in the process of montage, charged those spaces in a particularly cinematic way. The arrangement of *Der Bilderatlas*'s photographs and images visually intimates montage, but the technique particularly comes to life when you consider Warburg's habit of shuffling and rearranging the content.[59] Warburg may have been looking for "laws that govern[ed]"[60] the echoes and patterns that he found in the objects he studied, but as Kurt Forster points out, he did not believe in the notion of time as a perfectly progressing continuum. Instead, he believed in "irruption," or the sudden resurfacing (puncturing) of a memory, moment, or symbol.[61] So it makes sense that when looking at *Der Bilderatlas* our attention is drawn over and over again to the negative space between the images, or what stands in for the site of the cut in Murch's definition—the field where things remain hidden until they resurface.

Knowing that Warburg believed that objects could contain living energy and tangible traces of memory,[62] this space becomes even more interesting. Forster points out that Warburg's collection of books went beyond a "utilitarian" purpose: for Warburg, "books and photographs embodied the cultural memory of humanity."[63] To hold a book would be to hold a trace—a physical manifestation—of a particular expression. Forster notes, "For Warburg it was thus 'charged,' as it were, with cultural content. To tap these batteries was to obtain a living current of life from the past. The book stood for memory in all its forms. Materially and allegorically, it became not only the objective vehicle of historical content but the shibboleth of continuity."[64]

In a discontinuous universe, material objects like books and images remained the only form of continuity one could count on. Thus Brian Dillon's statement in a recent *Frieze* article that Warburg thought of the negative space around the images in *Der Bilderatlas* as "a conductive medium"[65] invested with formative powers takes on a very literal potential. Warburg based the elliptical shape of his library on the kiva (the circular ceremonial structure of the Hopi); it does not seem a far step to imagine the black cloth that surrounds the *Der Bilderatlas* images as another "consecrated space."

No matter which panel you investigate, the opaque black of the burlap cloth provides a universal ground, filling the intervals between neighboring images and creating a variety of frames. The amount of negative space varies from panel to panel, just as the spaces between the images vary in size from negligible to several inches wide. The result is that on some panels, the images look like archipelagos afloat in a vast black sea, whereas on others the images look like leaves strewn so thickly that one fails to see the sidewalk underneath. Yet rather than trick us into the illusion of continuous movement by which the images displace other images so quickly that our eyes cannot see it, Warburg freezes his "zones of displacement."

A projector displaces filmic images a rate of 1/24 of a second, barely giving us enough time to stop and consider about the fact that each of these is a still image, followed by another still image. *Der Bilderatlas* challenges us to occupy or inhabit this space between images. Visually, it's impossible not to get caught in the black gaps that frame the images. In this way, the preponderance of negative space in *Der Bilderatlas* can be seen as a metaphor for historical time, or the time of the interval, while the individual images can be read as examples of instant, indexical moments. As he shuffled through *Der Bilderatlas*'s images, Warburg occupied this space. And when we look at the photographs left for us and try to puzzle out the meaning between two images, so do we. What lies between Warburg's still images (instants), in the site of the gap (the interval), is us.

Notes

1 Tom Gunning, "An Aesthetic of Astonishment: Early Film and the (In)Credulous Spectator," in *Viewing Positions: Ways of Seeing Film*, ed. Linda Williams (New Brunswick, NJ: Rutgers University Press, 1995).

2 See Kurt W. Forster's introduction in Aby Warburg, *The Renewal of Pagan Antiquity*, trans. David Britt (Los Angeles: Getty Research Institute, 1999), 7.

3 Forster, 9.

4 Philippe-Alain Michaud, A*by Warburg and the Image in Motion*, trans. Sophie Hawkes (New York, Zone Books: 1994), 253–5.

5 Forster, 33.

6 Stephen Kern, *The Culture of Time and Space: 1880-1918* (Cambridge, MA: Harvard University Press, 1983), 11.

7 Ibid., 19.

8 For additional perspectives on the experience of time in modernity, see Marshall Berman, *All That Is Solid Melts into Air: The Experience of Modernity* (New York: Penguin Books, 1988), Mary Ann Doane, *The Emergence of Cinematic Time: Modernity, Contingency, the Archive* (Cambridge and London: Harvard University Press, 2002), Elizabeth Grosz, *The Nick of Time: Politics, Evolution, and the Untimely* (Durham and London: Duke University Press, 2004), and David Harvey, *The Condition of Postmodernity* (Oxford and Cambridge: Basil Blackwell, 1989).

9 For a specific, prolonged discussion of art in relation to "the culture of time and space" at the turn of the last century, see Kern, *The Culture of Time and Space*.

10 Doane, 5–8, 105.

11 Ibid., 23–25. In particular, see Chapter 5.

12 Filippo Tommaso Marinetti, "The Futurist Manifesto" (1909), trans. James Joll, accessed September 3, 2010, http://cscs.umich.edu/~crshalizi/T4PM/futurist-manifesto.html.

13 Walter Benjamin, *Illuminations*, trans. Harry Zohn, ed. Hannah Arendt (New York: Schocken, 1969), see especially "On Some Motifs in Baudelaire," 163–165. See also Sigmund Freud, *The Standard Edition of the Complete Works of Sigmund Freud*, trans. and ed. by James Strachey (London: Hogarth Press, 1955), especially "Beyond the Pleasure Principle," 25.

14 Kern, 1–2.

15 "Michael Lombardi, "Does Anybody Really Know What Time It Is?" *Popular Communications* (February 2006), 8-19.

16 Kern, 11.

17 Ibid., 11–19. Although Newton's theories had numerous detractors, even among his contemporaries, physical evidence against his formulation of time did not appear until the late nineteenth century.

18 Ibid., 18–19.

19 Doane, 33–34.

20 Ibid., 69–107.

21 In the words of Stephen Kern, the afterimage "showed that we experience the present visually as a quantum of time involving the immediate past." Kern, 82.

22 This concept, or variations thereof, was used by Freud, Henri Bergson, and Charles Saunders Peirce among others to talk about the possibility of a present moment with no "contamination" by the past. See Doane, 76–78, 90–102, and Kern, 41, 45–47.

23 Elizabeth Grosz offers a useful discussion of the importance of the concept of contingency to modernity in *The Nick of Time: Politics, Evolution, and the Untimely* (Durham and London: Duke University Press, 2004). Grosz suggests that part of the need to define time as able to encompass contingency (accident or chance) stems from evolutionary discourse. Without accident (mutation), evolution could not be possible.

24 Charles Saunders Peirce quoted in Doane, 89.
The variant spelling "semeiotic" is often used in reference to Peirce's philosophical logic to distinguish it from the Saussurian tradition of semiology. Some scholars have claimed that this variant reflects Peirce's his own preferred spelling.

25 Ibid.

26 Doane, 92.

27 Peirce quoted in Doane, 99.

28 Doane, 99.

29 Henri Bergson quoted in Doane, 77.

30 Doane, 173–75.

31 My summaries of Peirce and Bergson rely heavily on Doane's information and analysis. See Doane, 76–78, 90–102, 173–75.

32 Doane, 11.

33 Ibid., 9.

34 Ibid., 9.

35 According to film theorist Andre Bazin, montage is "the ordering of images in time." Andre Bazin, "The Evolution of the Language of Cinema," in *Film Theory and Criticism*, ed. Leo Braudy and Marshall Cohen (New York and Oxford: Oxford University Press, 2004), 52. Director and film theorist Sergei Eisenstein's definition is much wider than Bazin's; montage is not just the ordering of images in time, but also could be the dramatic juxtaposition between light sources in the frame of a shot, or "a conflict between an event and its duration." Sergei Eisenstein, "Montage

is Conflict," *The Cinematic*, ed. David Campany (London: Whitechapel, 2007), 31.

36 Walter Murch, I*n the Blink of an Eye: A Perspective on Film Editing* (Los Angeles: Silman-James Press, 2001), 5.

37 Murch, 57.

38 Murch, 63.

39 Warburg renounced his Judaism and eventually married a Protestant woman, a fact that has influenced many interpretations of his projects. See Ron Chernow, T*he Warburgs* (New York: Vintage Books, 1993), 60, 61, 66–68, 113–14, 121–22, 123, 194–95, 204–205.

40 Alberto Manguel, *The Library at Night* (New Haven and London: Yale University Press, 2006), 200.

41 Kurt W. Forster writes: "Warburg sacrificed one of the most cherished notions of academic art history in his time, the concept of autonomy for both aesthetic values and artists." See Forster, "Aby Warburg's History of Art: Collective Memory and the Social Mediation of Images," *Daedalus* 105, no. 1 (1976), 172.

42 Warburg was known for obsessive-compulsive behavior and temper tantrums, which may or may not have been related to a diagnosis of schizophrenia for which he would spend six years of his life institutionalized. Despite the romantic story about trading his birthright, he believed that his family had an obligation to support his research as they would support a family member who had decided to devote his or her life to studying the Talmud, and this sense of entitlement was a source of family stress. See Chernow, 62–63, 123–26, 285–86.

43 The K.B.W. was renamed the Warburg Institute after it was smuggled to London during World War I, where the collection was taken over by the University of London. See Chernow, 405–408.

44 Warburg Institute scholars include Frances Yates and Erwin Panofsky. Both the K.B.W. and the Institute served as early incubators of iconology. In fact, under the advocacy of Panofsky, iconology became one of the primary modes of studying art history. There is disagreement over the extent to which Panofsky's iconology resembles Warburg's; Giorgio Agamben, Philippe Alain Michaud and Georges Didi-Huberman argue that Panofsky's iconology immediately lost much of the dynamism that it had held under Warburg. They assert that under Panofsky, iconology came to mean that common art historical figures and motifs had specific meanings, whereas for Warburg meaning was never fixed, but always based "on the interrelationships." In Panofsky's version, meaning became virtually static. In Warburg's, there was the constant threat of change. See Giorgio Agamben, "Aby Warburg and the Nameless Science," P*otentialities: Collected Essays in Philosophy*, trans. Daniel Heller-Roazen (Stanford, CA: Stanford University Press, 1999), 98–100; Philippe-Alain Michaud, *Aby Warburg and the Image in Motion*, trans. Sophie Hawkes (New York, Zone Books: 1994), 137–44; and Georges Didi-Huberman's preface to Michaud's text, 13–14.

45 Forster, 28.

46 Michaud, 251–252.

47 For a discussion of Warburg's interest in meanings created by the relationship between things, see Giorgio Agamben, "Aby Warburg and the Nameless Science," *Potentialities: Collected Essays in Philosophy*, trans. Daniel Heller-Roazen (Stanford, CA: Stanford University Press, 1999) and Charlotte Schoell-Glass, "'Serious Issues': The Last Plates of Warburg's Picture Atlas *Mnemosyne*," *Art History As Cultural History: Warburg's Projects*, ed. Richard Woodfield (United States: Gordon and Breach, 2001).

48 Alberto Manguel, *The Library at Night* (New Haven and London: Yale University Press, 2006), 208.

49 Warburg did not serve in World War I, but this period saw the biggest deterioration in his mental state.

50 For information on Warburg's mental health, see Ron Chernow, T*he Warburgs* (New York: Random House, 1993), 120–21, 126–27, 174–77, 203–206, and 258–63; and Ludwig Binswanger and Aby Moritz Warburg, *La guérison infinie: histoire clinique d'Aby Warburg*, trans. Maël Renouard and Martin Rueff (Paris: Éd. Payot & Rivages, 2006). For information on the Kreuzlingen lecture, including a full transcript, see Aby Warburg, *Images from the Region of the Pueblo Indians of North America*, trans. Michael P. Steinberg (Ithaca, New York: Cornell University Press, 1995).

51 See Kurt W. Forster's introduction to Aby Warburg, *The Renewal of Pagan Antiquity*, trans. David Britt (Los Angeles: Getty Research Institute, 1999), 38, 45.

52 Manguel, 208.

53 For discussion of Warburg's working methods, see Giorgio Agamben, "Aby Warburg and the Nameless Science," in *Potentialities: Collected Essays in Philosophy*, trans. Daniel Heller-Roazen (Stanford, CA: Stanford University Press, 1999); Jill Bennett, "The Aesthetics of Intermediality," *Art History* 30, no. 3 (June 2007): 432-50; Chernow, 118–120, 265–66, 281–82; E.H. Gombrich and Fritz Saxl, *Aby Warburg: An Intellectual Biography* (London: The Warburg Institute, 1970), 328–29, 333–34; and Charlotte Schoell-Glass, "'Serious Issues': The Last Plates of Warburg's Picture Atlas *Mnemosyne*," *Art History As Cultural History: Warburg's Projects*, ed. Richard Woodfield (United States: Gordon and Breach, 2001), 184–86.

54 Forster, 11.

55 Warburg quoted in Forster, 89. Warburg also believed (ahead of his time) that the

meaning of a work of art was as much a product of its surrounding and the beholder as any inherent quality: "We must not demand of antiquity that it should answer the question at pistol point whether it is classically serene or demonically frenzied, as if there were only those options. It really depends on the subjective make-up of the late-born rather than on the objective character of the classical heritage…" Warburg quoted in Forster, 6.

56 Ibid.

57 Michaud, 39–40.

58 Bing, 302.

59 As I mentioned previously, this was a daily habit that Warburg sustained for five years.

60 Forster, 31.

61 Ibid.

62 Chernow writes about Warburg's belief that the knick-knacks on his desk were malevolent entities. Chernow, 262.

63 Forster, 31.

64 Ibid.

65 Brian Dillon, "Collected Works: Aby Warburg's Mnemosyne Atlas," *Frieze*, online archive accessed May 1, 2009, http://www.frieze.com/issue/article/collected_works/.