

3 :: Polygraphic Photography and the Origins of 3-D Animation

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The Parallel Image

It is now something of a cliché: in order to speak about the images of the present one feels obligated to come to terms with the nineteenth century, weighing in on the old arguments about cinema's origins; raising a glass to those brave souls anxious about the growing technological alienation within art, to Baudelaire or Benjamin or Heidegger or Adorno according to taste; and pointing out how this or that historical detail was overlooked in the grand developmental evolution of the image from mind and memory to the plastic and visual arts, to the automatic camera, to the moving image, and ending up with the digital. Nowadays even the responses to such pat histories are themselves well rehearsed. To speak of nineteenth-century optical toys as "precinematic" offends on many levels, for not only does this reduce the specificity of real history to a mere instrumental prehistory within a process that can and must unfold in one particular way—Hollywood as destiny—it also smacks of a certain presentism within which the past is cast to play the various theatrical roles required to narrate *our* special story. So Eadweard Muybridge and Étienne-Jules Marey play their respective parts because they mean something to us today, no matter that chronophotography was only one chapter in Marey's life's work, no matter that Marey wanted first and foremost to decompose movement, not sew it back together again, no matter that neither of the two men can claim to have invented the technique outright, no matter that the most interesting chronophotographer was most certainly Albert Londe.

Was this not the problem that structuralism was supposed to solve? Recall Michel Foucault's famous concept of the historical *a priori*:

An *a priori* not of truths that might never be said, or really given to experience; but the *a priori* of a history that is given, since it is that of

things actually said. The reason for using this rather barbarous term is that this *a priori* must take account of statements in their dispersion, in all the flaws opened up by their non-coherence, in their overlapping and mutual replacement, in their simultaneity, which is not unifiable, and in their succession, which is not deductible; in short, it has to take account of the fact that discourse has not only a meaning or a truth, but a history, and a specific history that does not refer it back to the laws of an alien development.¹

How un-Foucauldian this historical *a priori*. The scandal is not so much that discourses have histories, a notion that the discipline of history is still warming up to, but that Foucault is so willing to give priority to the prior, what others call, using equally barbarous terms, the *real* or the *factual*. The great Foucauldian compromise, then, is between the anti-anthropocentricity of worldly data *données*, which is a benefit of structuralism's scientific method, and the fact that all these data are really part of a contingent, historical (read quasi-anthropocentric) discourse subject to its own laws and systems of management. The trick is that Foucault's *a priori* is not exactly a Kantian one; in Kant the *a priori* is a question of running prior to experience, yet in Foucault it is a question of running prior to knowledge. One puts the stress on the subject, the other on discourse. And while the Kantian framework dominated for two centuries at least, we have most certainly been living within a Foucauldian framework for some time now, a fact that shows no indication of changing any time soon.

So journey back again into Foucault's historical *a priori*, back again to the nineteenth century, only this time in search of a different kind of knowledge, what Foucault might have called a subjugated knowledge. Not political subjugation of course, but a knowledge from an occluded past, a discourse overlooked and downplayed, tidbits of evidence left behind as unimportant, or hitherto unresolved. Ever since the noble contributions of authors such as Friedrich Kittler, media theory has been shackled to an ignoble narrative of the modern media: the year 1900 marks the age of seriality; the anxiety of the nineteenth century is the anxiety of reproduction; noise and nonsense are not just threats to meaning, they are its very substrate; the image is fundamentally a mechanized image that fires forward in a line, like the rat-a-tat-tat of a machine gun.

This story of things need not be contested outright. In many ways Kittler is correct about the media of 1900. Nevertheless, I wish to tell an

alternate story, parallel to the first, a story that must remain apart from the Kittlerian corpus because it has a different origin and a different end. The goal then, to give away the ending before barely having gotten under way, will be to reconstruct a genealogy not for the moving image but for the information model, not for serial animation but for parallel animation, not for the linear but for the multiplexed—in short, not for the cinema but for the computer.

Petrified Photography

The history of chronophotography is reasonably well documented. But even as photography experimented with time and movement in the late nineteenth century, the photographic apparatus also migrated in another direction seldom discussed. Not just a migration into the moving image but a migration toward the plastic arts. Not just toward the protocinematic optical toys but toward that oldest of art forms, sculpture. In fact, photography's migration into sculpture predates chronophotography by several years.

In the early 1860s, a sign with large lettering appeared on the façade of a modern four-story building in Paris. The building was newly constructed in iron and glass on what was then called the Boulevard de l'Etoile, stemming northward away from the Arc de Triomphe. The sign touted "Portraits—from mechanical sculpture: Busts, medallions, statues." According to the art historian Robert Sobieszek, "when a large circular cupola was first erected at 42, Blvd. de l'Etoile, constructed of metal mullions with blue and white panes of glass, it was thought to be a conservatory, a zoo for small animals in the English style, an aquarium and, only finally, a photographic studio."² When the poet Théophile Gautier visited the building and its central dome in 1863, a large chamber forty feet wide and thirty feet high (see figure 3.1), he likened it to "an Oriental copula, a weightless dome of white and blue glass."³

The author Paul de Saint-Victor, who also surveyed the premises, was impressed by the hollowness of the domed photographic studio: "Imagine a vast glass rotunda containing no instruments of any kind, no apparatus visible to the naked eye, nothing to offer any indication of the wonderful operation about to transpire."⁴ Gautier advanced to the middle of the rotunda, up two steps onto a pedestal, and positioned his head under a silver pendant hanging to mark the exact middle of the dome: "Leaving his hat on the coatrack, he tucked his hand into the lapel of his large jacket and gazed off into the distance."⁵ An operator blew a

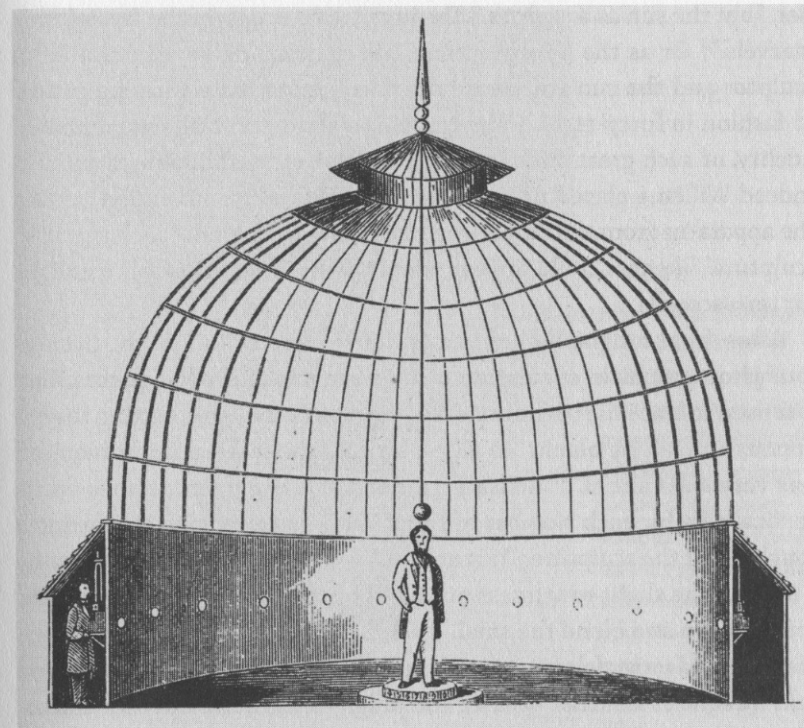


FIGURE 3.1 François Willème's glass dome, housing a perimeter ring of cameras directed inward at a central subject. Source: Théophile Gautier, *Photosculpture* (Paris: Paul Dupont, 1864), 5.

whistle and twenty-four cameras opened at once. The twenty-four apparatuses were safely hidden behind false walls occupying the perimeter of the chamber: "Each camera had a primitive shutter arrangement in front of the lens; these shutters, in turn, were all interconnected, so that a single cord could be pulled to obtain two dozen simultaneous exposures."⁶ A second whistle sounded, and the exposure was complete. The entire procedure lasted less than ten seconds.

The strange new building on the Boulevard de l'Etoile was in fact not a zoo for small animals but a studio combining the arts of photography and sculpture. Bearing the name *Photosculpture de France*, the studio was a new commercial endeavor initiated by the artist François Willème. Willème filed a French patent on August 14, 1860, titled "Photosculpture Process," which described a technique for producing portrait sculptures relatively quickly and cheaply.⁷

It was wonderful to think of the sun as a photographer, believed Gau-

tier, “but the sun as a sculptor! The imagination reels in the face of such marvels.”⁸ Or as the journalist and editor Henri de Parville put it: “A sculptor and the sun will become two collaborators working together to fashion in forty-eight hours busts or statues of a hitherto unknown fidelity, of such great boldness in outline, of such admirable likeness.”⁹ Indeed Willème played up the magical quality of his invention, hiding the apparatus from the sitter, who likely had no idea how such a precise sculptural likeness could appear simply by bathing oneself in sunlight for ten seconds.

After the photographic session, crafters projected each of the twenty-four photographs in succession using a magic lantern.¹⁰ A pantograph was used to trace the outline of each projected silhouette, cutting the silhouette into a clay blank: “In all probability the manual input required was very substantial.”¹¹ Artisans turned the clay fifteen degrees on its vertical axis for each number of the twenty-four tracings, producing a rough cut of the sculpture: “It is now necessary to smooth by hand, or by a tool, all the slight roughness produced by the various cuttings, and to soften down and blend the small intervals between the outlines or profiles. This is a most delicate part of the process; for it must be understood that it requires an artist of taste and judgment to perform it satisfactorily, and to impart to the work all the finish possible.”¹² The technique was pure magic to Gautier: “Each number carries its own essential line, its own characteristic detail. The mass of clay is scooped out, thinned down, and given shape. The traits of the face appear, the folds of the clothing are drawn out: reflection transformed into form.”¹³ The hand of the sculptor had been replaced by a mechanized technique, aided by the intermediary of photography, and ultimately by the light of the sun. *Solem quis dicere falsum audeat?*

Before working in clay, Willème began his research with a prototype of a woman’s head fashioned from thin slats of wood (see figure 3.2):

This wooden head was probably shown to the Société Française de Photographie by Willème in May 1861, during the session at which he explained his new photographic process. However, the head was produced using a different technique from the one he subsequently developed and marketed. According to Willème, after taking fifty different angle shots of a statue, one hundred strips of wood were assembled two by two so that they could be cut out according to the profiles of the photographs.¹⁴

As in the science of psychophysics and its concept of a “just noticeable difference” in the human sensorium, Willème experimented with the



FIGURE 3.2 François Willème, *Portrait of a Woman* (ca. 1860). Demonstration specimen used by François Willème in a presentation of the photosculpture technique on May 17, 1861. Courtesy of George Eastman House, International Museum of Photography and Film.

width of the digital segmentation in order to achieve an optimal size. His wooden head of 1861 had a “resolution” of 3.6 degrees around the vertical axis. Later, once the technique was established using twenty-four cameras, the resolution had been degraded by a factor of four to fifteen degrees.

With Willème’s *sculpture instantanée* (instant sculpture) in mind, we are now in a position to compare and contrast photosculpture and chronophotography. Both techniques are digital techniques; that much is clear. The difference lies in their divergent employments of the digital. In the case of chronophotography, digitality appears as a result of discrete photographic impressions segmented across time. For photosculpture, however, digitality appears as a result of discrete photographic impressions segmented in a spindle of space. Instead of a sum of pictures, there is a sum of profiles.

Willème’s technique reveals something profound. It reveals that there is an alternate history of photography in which point of view has no meaning. The point of view, whether single or multiple, as in the case of montage, has so dominated how one thinks of photography, cinema, and

visual culture in general that it is initially quite difficult to understand the ramifications of Willème's technique. There are two key aspects that must be underscored. First, one must proliferate the number of points of view dispersed within a space—proliferated not simply to two or four but to a mathematically significant number like twenty, or a hundred, or a thousand. Second, one must conceive of the multiple points of view as temporally synchronous; in other words, one must reject the basic premise of chronophotographic animation (and later cinematic animation), which multiplexes the image through time. In multiplying the number of views, one is proliferating them along a set of spatial coordinates, not along the axis of time. Willème opening and closing all the camera apertures at the same moment is crucial. The point of view does not move, as in the cinema. Instead, the view is metastable, spanning all twenty-four cameras at once. Willème's mode of vision exists as the cumulative summation of twenty-four points of view fixed at the same instant in time. But twenty-four is no special number: once the shackles of monocular or even binocular vision have been removed, in other words, the shackles of the one or the two, it is trivial for twenty-four to become a hundred, a thousand, or indeed a virtual totality of "all-vision," like the Panoptes monster in Greek myth.

It is not difficult to see how this mode of vision did not contribute much to what would become cinematic animation. In fact, one might go so far as to label this an *anticinematic* way of seeing. In the cinema the multiplication of views leads to choice or synthesis. It leads, in other words, to montage or collage: one either montages a scene together by choosing which view to sequence at which time, or one composites two or more image layers together to synthesize a new image. It leads, thus, to the serial image or the recursive image. By contrast, Willème's mode of vision is neither choice bound nor synthetic. It is metastable. Willème multiplies the view into a virtual view, a virtual camera existing synchronically across twenty-four discrete apparatuses. Willème did not choose or sequence these twenty-four streams; he did not composite them backward into a single image. He maintains the metastable view as such, maintaining the view as manipulable model.

For Paul de Saint-Victor such metastases of the photographic view led not to an immaterial, omnipresent gaze but to a pure materiality, an immanent image—but a dead one too: "The true mission of this useful and humble art form will be to bring sculpture into private life and to perpetuate the photographic image—by petrifying it."¹⁵ To petrify photography means to transform it from a visual art to a plastic art. In other

words, Willème's petrified photography is a kind of photography that has finally escaped the long shadow of the camera obscura. And in escaping the limitations of the camera obscura's single aperture, photography smears itself across a limitless grid of points, neutering the axis of time while emboldening the axes of space.

Photographic Modeling

If Londe did not aim to model the world with his multilens devices from 1883 and 1891 (only photograph it), a slightly different technique, owing perhaps more to Muybridge and Willème than to Londe, was revealed in the early 1890s in Germany. Christian Wilhelm Braune and a student thirty years his junior, Otto Fischer, developed a technique for capturing the motion of a body and modeling it in three dimensions. Today it would be called a motion-capture animation device. Where photographers such as Londe, André-Adolphe-Eugène Disdéri, and Augustin Le Prince unknowingly took small steps in this direction, Braune and Fischer took a giant leap into the realm of parallel optical dimensionality, continuing the evolution begun by Willème. I leave it to Siegfried Zielinski to describe the details:

The male test person wears a tight-fitting, black-knit suit and, for safety reasons, thick leather shoes. His entire body appears to be wired, including his head. The electric supply is connected to the wires at his head, which enables the test person to move relatively freely. Technically, the thin white lines running down the sides of the body, called Geissler tubes, are the decisive feature of the suit. . . . Braune and Fischer's experimental design sought to solve a problem associated with Marey's method. The test persons in Marey's experiments had white or shiny metal strips attached to their limbs when he photographed them in motion, but these strips left light trails in the photographs and tended to blur the images. Exact registration and reconstruction of movements was not possible. The Geissler tubes in Braune and Fischer's experiment ran parallel to the rigid parts of the limbs and were held in place by leather straps. In all, there were eleven tubes. The advantage of this experimental design was that, since the Geissler tubes used induction current, they could produce short flashes of light in quick succession. Further, when the thin tubes filled with nitrogen flashed, they emitted much photochemically active light and, in a darkened room, it was possible to take photographs in which the individual limbs appeared as

separate lines. This equipment also enabled precise recording of how the movements of arm and leg related to each other or how the head related to the feet.¹⁶

What begins as chronophotography ends as dimensional modeling. Similar to the way in which stereometric cameras were used in photogrammetry, Braune and Fischer deployed a multilens technique consisting of four different cameras located in a geometrical arrangement around the subject, in the front, at the side, and so on. All cameras fired together, and measurements from the resulting photographs were correlated. In fact, Braune and Fischer's goal was *not* simply to produce a photographic image, chronographic or otherwise. Their goal was to record precise mathematical coordinates in x , y , and z dimensional space for the shoulders, knees, and other parts of the body in motion. So in this sense, Braune and Fischer are miles away from Marey or Muybridge (even though most history books would group them all together under the heading of chronophotography). To achieve the desired level of precision, Braune and Fischer would inspect the resulting chronophotographs under a microscope, measuring the precise positions of the test subject to several decimal points of accuracy. Using the registration marks that appear in each image and by correlating each measurement across all four cameras, extremely precise spatial coordinates could be recorded along three-dimensional x , y , and z axes. In fact, the long tables of vertex coordinates recorded by Braune and Fischer in their 1895 publication are surprisingly similar to today's 3-D animation formats. Braune and Fischer were more data hounds than photographers.

What was innovative, however, was the use that Braune and Fischer made of their heaps of data. Marey's bird in flight had been made into a three-dimensional geometric model, it is true, but at the end of the day Marey was no plastic artist. Braune and Fischer instead restaged their scores of vertex coordinates into actual three-dimensional models of human locomotion (see figure 3.3). If Marey's ultimate *métier* was geometric chronophotography, Braune and Fischer added dimensionality to the mix and produced something quite different, geometric *chronomodels*. The goal here is object modeling, not world simulation. The goal is a diffuse omniscient gaze engulfing a precisely modeled object world, not simply multiple points of view through time (cinema). Cinematic animation is never spatially synchronous within a single frame; its achievement is diachrony. Any sense of spatiality achieved by the cinema is an epiphenomenon. Braune and Fischer on the other

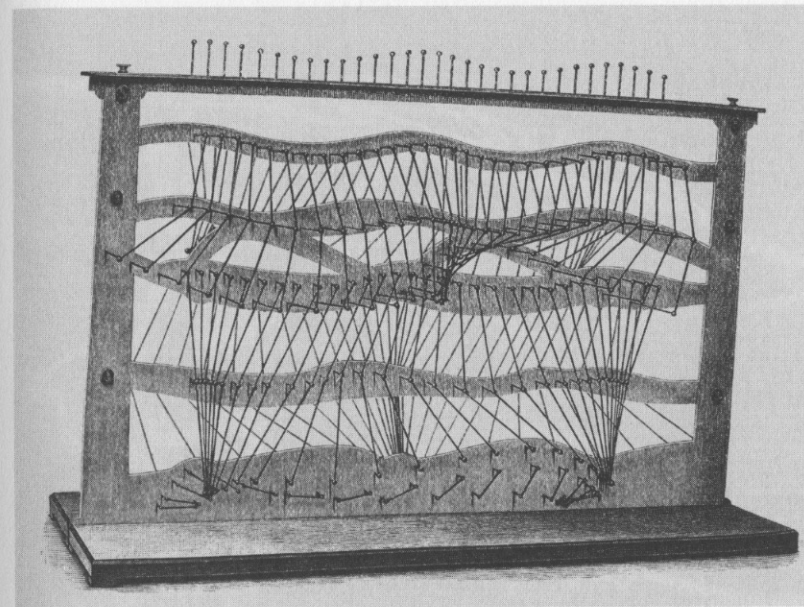


FIGURE 3.3 Three-dimensional chromodel of human locomotion. Source: Wilhelm Braune and Otto Fischer, "Der Gang des Menschen, 1 Teil, Versuche am unbelasteten und belasteten Menschen," *Abhandlungen der Mathematisch-Physischen Classe der Königlich Sächsischen Gesellschaft der Wissenschaften* 21 (Leipzig: Hirzel, 1895): 153-322, 270-71.

hand achieved both spatial synchrony and diachrony. The object can be spun around, manipulated at will. This is a fundamentally anticinematic mode of mediation; likewise it is antiphenomenological, since complete spatial synchrony is prohibited within the cinematic and phenomenological systems, themselves forever beholden to the singular experiences of a central gazing subject (or lens eye), however much it may be complicated by montage or the use of two or three concurrent cameras. The Braune and Fischer model presents a diffuse totality of the object. And in this sense, it is aggressively antiphenomenological and aggressively anticinematic. So just as Marey's geometric work pointed away from the cinema (even if his moving-plate work pointed toward the cinema), Braune and Fischer's dimensional models push elsewhere too. They point to a very different mode of mediation, and a very different kind of device. They point to 3-D animation. They point to the computer.

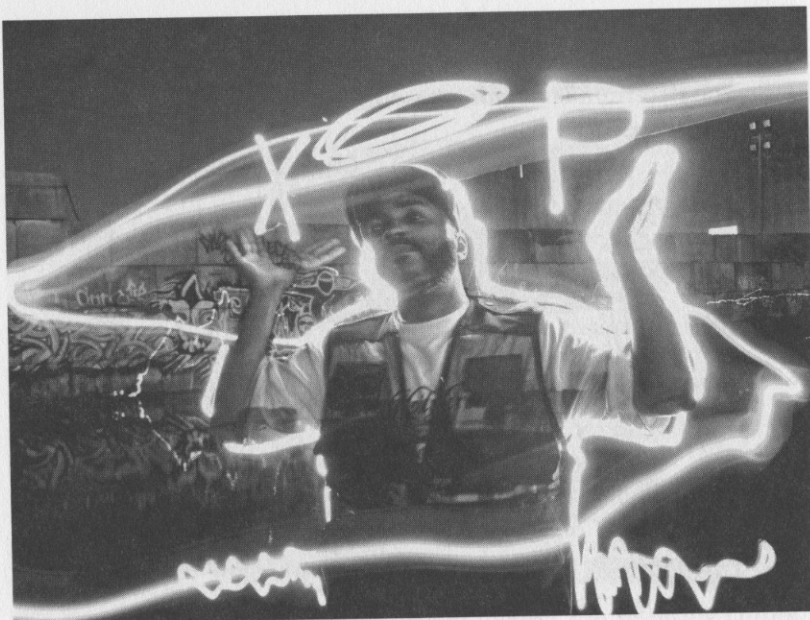


FIGURE 3.4 Graffiti Research Lab, “How to Enter the Ghetto Matrix (DIY Bullet Time)” (2008). Courtesy of Graffiti Research Lab and Dan Melamid. Photographic animation of the producer and rapper Large Professor, featuring the light graffiti of 2ESAE (a.k.a. Mike Baca).

The Multiplexed Camera

In order to understand the repercussions of this argument, it will be necessary to take the provocation quite literally: Braune and Fischer were doing three-dimensional “computer animation” in the 1890s. Consider the celebrated “bullet time” sequences from *The Matrix*, or the interesting reuse of the effect by the Graffiti Research Lab (see figure 3.4). A certain high-tech mythology has grown up around this technique, yet in actuality there is nothing particularly high-tech about it. The ability to freeze and rotate a scene within the stream of time is easy to perform with normal cameras. No computer is necessary. One simply needs to arrange a battery of cameras along the rotation arc and have the technical wherewithal to trigger them at exactly the same instant (which Willème accomplished one hundred and forty years earlier). Slice the individual frames together into a movie strip to achieve the effect. Thus, there is nothing lacking *technologically* that would have prevented bullet time from appearing a hundred years before the Wachowski brothers.¹⁷ Braune and Fischer didn’t use twenty-four cameras, and their resulting models were

plastic not photographic, but it requires no great mental leap to see how they too were effectively staging the same bullet-time effect.

So the determinist argument—“it wasn’t technologically possible to do three-dimensional animation in the 1890s”—doesn’t hold water. It was possible; it was done. And it certainly wasn’t a question of the human sensorium: the stereoscope had already primed large swaths of the viewing public for the marvels of dimensional media. The interesting pursuit therefore is not so much the chase after the technological roots of this or that device, but the inquiry into the conditions of possibility for a given mode of mediation, and to try to make some sense as to why one thing happened instead of another, when the *technical* conditions were ripe and ready for each. In the case of Marey’s famous photographic gun of 1882, the sequence of bullet chambers was remediated as individual photographs, creating the modern convention of a photographic filmstrip.¹⁸ The device creates multiple images of the same scene from the same point of view, but divided into separate photographs and extended through time. It took one hundred years for Marey’s time bullets to be transformed into the bullet time of computer animation.¹⁹ If the cinema became dominant in the early part of the twentieth century, while three-dimensional computer modeling did not until the late twentieth century, we must find the answer beyond the standard volumes of industrial and technical history.

The photographic gun is on the side of cinema; bullet time is on the side of modeling. So it would not be out of place to pose the question in reverse: why did *cinema* get invented around the turn of the twentieth century and not modeling? Why does cinema precede 3-D modeling when there does not appear to be any obligatory reason why it should? Perhaps the phenomenological framework determined the technical one, green-lighting the cinematic modality of the photographic gun and sidelining the informatic modality of the photographic array. If that be the case, then bullet time is the road not taken of late nineteenth-century Euro-American media, sidelined by a stronger phenomenological paradigm that pegged visibility to the standard of one viewer, standing in one place (or moving chronologically through multiple places via the rational sequences of montage), oriented with its own special perspective on its own special world.

By 1900, Kittler’s symbolic year, bullet time goes into hibernation, and time bullets take center stage. Marey’s time bullets settle time, regularize it into fixed frequency. By 1900 time becomes the natural infrastructure of cinematic animation, while spatial representation and visual ex-

pression become variables. But in the case of bullet time (whether in the 1890s or the 1990s), time is the variable, and space is withheld in synchrony. Mine is thus a story of selection and suppression: the cinema automates time, making it irrelevant (and thereby elevating the value of worlds); the computer automates space, again making it irrelevant (thereby elevating something else again, action perhaps). Volumetric representation becomes the so-called natural infrastructure of computer animation; whereas in painting or photography space is expressive, never infrastructural. By contrast, discrete temporality becomes the natural infrastructure of the cinematic image.²⁰

This is why Willème's photosculpture or Braune and Fischer's chronophotography can be considered protocomputational. The classical chronophotography techniques of Marey or Muybridge do not have much to contribute to the prehistory of computer animation. Only through the multiplexing of vision, in Muybridge's multiple synchronic images or in Londe's grid cameras, do we see a new pathway emerging. The earlier systems deployed multiple lenses in order to move the test subject. Willème and Braune and Fischer deployed multiple lenses in order to animate the camera (by making it metastable and virtual). By modeling the spatial coordinates of the test subject, it became possible to translate the movement (of the camera) into spatial dimensionality, and in doing so, translate photography into sculpture.

Only polygraphic photography can explain the origins of computer modeling, and by extension computer animation, because this photography introduces a way of seeing completely foreign to the cinematic legacy: the virtualization of the eye into a metastatic virtual camera able to view an object from any point of view whatsoever.

Notes

A number of people have given me valuable feedback on portions of this chapter, including Finn Brunton, Jeff Guess, Tom Gunning, Miriam Hansen, James Hodge, Ben Kafka, and Kirsten Thompson. Nevertheless, the claims (and shortcomings) of the present argument are my own responsibility. All unattributed translations from the French are mine.

1. Foucault, *The Archaeology of Knowledge*, 127.
2. Sobieszek, "Sculpture as the Sum of Its Profiles," 621.
3. Gautier, *Photosculpture*, 5. This short booklet was excerpted from *Le Moniteur Universel* (January 4, 1864).
4. Paul de Saint-Victor, "Photosculpture," *La Presse*, January 15, 1866, quoted in Gall, "Photo / Sculpture," 65.

5. Drost, "La photosculpture entre art industriel et artisanat," 113.
6. Sobieszek, "Sculpture as the Sum of Its Profiles," 621.
7. François Willème, "Photosculpture Process," French patent number 46,358, August 14, 1860. See also additions filed April 6, 1861; September 9, 1863; and June 14, 1864.
8. Gautier, *Photosculpture*, 4.
9. Henri de Parville quoted in Sobieszek, "Sculpture as the Sum of Its Profiles," 622.
10. "Willème almost always used a quarter-plate camera which accommodated a negative slightly less than ten and one-half centimeters high." Sobieszek, "Sculpture as the Sum of Its Profiles," 619.
11. Sorel, "Photosculpture," 82.
12. "Photo-Sculpture," *The Art-Journal* 3 (May 1864): 141.
13. Gautier, *Photosculpture*, 8.
14. Sorel, "Photosculpture," 81.
15. Quoted in Gall, "Photo / Sculpture," 76. The phrase *petrified photography* is Gall's.
16. Zielinski, *Deep Time of the Media*, 245, 248.
17. As James Hodge has pointed out to me, others had been experimenting with this mode of vision well before it ended up in Hollywood. In the early 1980s, Tim Macmillan developed what he calls a "time-slice" camera, which he would eventually use in a video projection titled *Dead Horse*, which exhibited at the London Electronic Arts Gallery in 1998.
18. Marey was not the first to marry camera and gun. See Eder, *Die photographische Camera und die Momentapparate*, for any number of exotic devices, such as Dr. Fol's photographic gun (p. 587) and E. von Gothard's photographic gun (p. 589).
19. A number of articles narrate the mid-twentieth-century passage from a traditional photographic image rooted in perspectival, Renaissance techniques to a computer-enhanced photographic image oriented around the techniques of volumetric capture, multiple points of view, and world simulation. See in particular Cartwright and Goldfarb, "Radiography, Cinematography and the Decline of the Lens."
20. This is the only reason why someone such as Gilles Deleuze can speak of the "time cinema" as a kind of art cinema. See in particular *Cinema 2* and the end of *Cinema 1*. Deleuze's book on Francis Bacon is also interesting here, since, as is well documented, Bacon was cognizant of Muybridge and even incorporated the chronophotographic aesthetic into his paintings, including the nondiegetic registration marks and the rounded ring as a kind of photographic stage. See Deleuze, *Francis Bacon*.

32. Eisenstein, *The Eisenstein Collection*, 94.
33. Eisenstein, *The Eisenstein Collection*, 158. Zola, however, does not speak of “reality” but of “a corner of creation”: “J’exprimerai toute ma pensée en disant qu’une oeuvre d’art est un coin de la création vu à travers un tempérament” (I will express the entirety of my thought in saying that a work of art is a corner of creation seen through a temperament). Zola, *Mes haines*, 234.
34. Völker, *Ästhetik der Lebendigkeit*, 263. Translation is mine.
35. Völker, *Ästhetik der Lebendigkeit*, 262.

9 :: Frame Shot: Vertov’s Ideologies of Animation

MIHAELA MIHAILOVA AND JOHN MACKAY

We could begin by postulating that only the technological-economic limitations plaguing Soviet art workers in the early 1920s—absence of equipment, most pertinently, along with shortages of raw film—prevented the extravagantly gifted creators associated with Soviet constructivism from engaging with animated film as seriously and creatively as they practiced (among other things) graphic, architectural, clothing, and industrial design. Indeed, if we think of constructivist animation during the movement’s glory years, little comes to mind apart from the moderately well-known mobile intertitles that Aleksandr Rodchenko created, in some cases reworking some of his own “spatial constructions,” for Dziga Vertov’s *Kino-Pravda* (*Film Truth*) experimental newsreel series (1922–25). Not much to go on, it would seem: still, what light might these intertitles shed on the obscure relationships between animation, constructivism, and Vertov’s “kino-eye” cinema?

To be sure, some of these intertitles can be called animations only in a loose sense. Near the beginning of *Kino-Pravda*’s fourteenth issue (1922), which was dedicated to the Fourth Congress of the Communist International in Moscow (November 5 to December 5, 1922), a Rodchenko construction, identified by Yuri Tsivian as *Spatial Construction 15* (1921), is shown turning clockwise around its vertical axis and bearing the words “ON ONE” on one side and “SIDE” on the other (see figure 9.1).¹ These five seconds of rotation are wedged between a shot of a globe turning counterclockwise and evidently advancing toward the camera, and a shot of another Rodchenko construction with the letters of the word “America” distributed more or less syllabically over its rotating surfaces.

Thus, it could be said that we are looking at a moving photograph of a sculpture turned into a suspended mobile rather than animation as