Chapter 2

UNSTOPPABLE DEVELOPMENT

THE TROPES that Alexander Pope and Count Francesco Algarotti associated with the camera obscura resurfaced in the 1830s and 1840s because chemical photography picked up where the camera obscura left off, both technically and ontologically. This might seem a puzzling claim, since unlike the images that appear inside the camera obscura, which are mobile and ephemeral, the defining attributes of analogue photography are immobility and permanence. The photographic image was, however, neither immobile nor permanent in the first decades of its history. It emerged slowly, through the gradual accretion of the traces inscribed on a "recipient-plate" by the light emitted by the external world, and it often disappeared shortly after it arrived.[1] And even when this image did not blacken or fade, there was an instability at its core.

Niépce began experimenting with chemical photography in 1814,[2] significantly earlier than either Daguerre or Talbot. He was drawn to it not for aesthetic reasons, but rather because he saw it as a potentially reproductive medium, like lithography—a vehicle for generating multiple copies of already existing images.[3] Niépce repeatedly tried to actualize this potential by waxing or oiling an engraving, placing it on a surface coated with a light-sensitive varnish, and exposing it to the sun. In 1822 he succeeded in making a permanent contact negative of an engraving of Pope Pius VII. Others followed, some of which he had acid-etched, in order to render them more reproducible, and from which he managed to extract a few faint paper contact positives.[4]

In 1816, Niépce also began trying to "obtain" a printable "view" of nature with the help of a camera obscura.[5] As we saw in the previous chapter, many seventeenth- and eighteenth-century users of this device also described their activities in this way, and for them, too, "taking" a "view" of nature meant arresting the camera obscura's image stream, and forcing the resulting image "to remain on the table."[6] They sought to become "takers" rather than "receivers" of these luminous images by tracing their outlines on a sheet of paper. In most of the devices that were designed for this purpose, the screen was a tabletop, on

which the user placed his tracing paper. He gazed down at the image stream, which was projected onto the screen from above or below. The "views" that he "took" with this device were thus manifestly derivative—copies of a preexisting model that issued from an external source. This was not a psychically sustainable arrangement for the modern subject, whose defining feature was "originality."

The optical camera obscura that Robert Hooke described to the Royal Society in 1694 made it much easier for the user to attribute what he saw to his own look.[7] This cone-shaped device fit over his head, moved when he did, and allowed him to "point" at whatever he wanted to "see." The screen functioned simultaneously as a viewfinder and a drawing surface, and its snug position within the camera obscura concealed the fact that the image stream entered the device from the other end. The user seemed to be looking *through* the camera obscura, at the world outside, and recording what he saw (see chapter 3, figure 40).

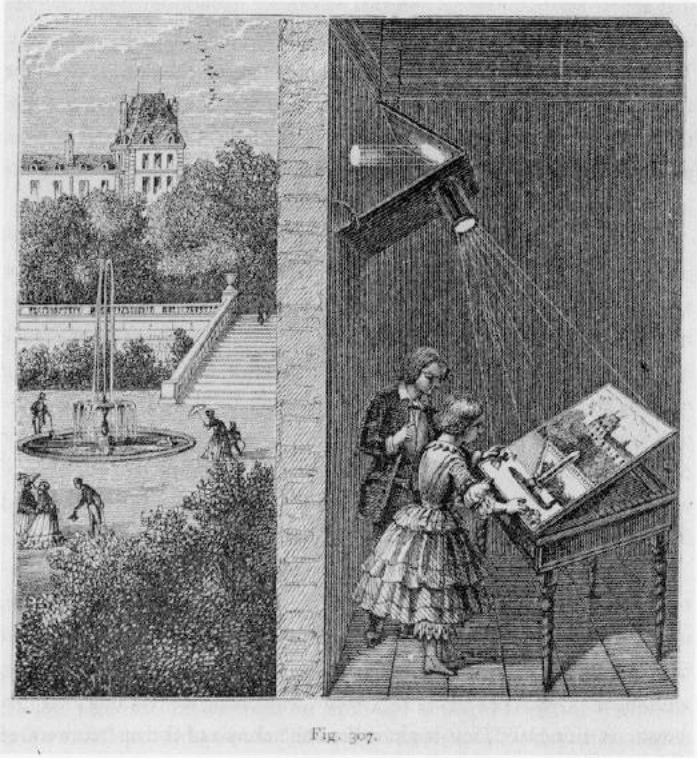

Figure 22. Illustration from Adolphe Ganot, *Natural Philosophy*, 1872.

Niépce pushed this project further. Instead of tracing the camera obscura's images on a sheet of paper, he tried to make the camera obscura draw what *he* saw. The "view" that he wanted the camera obscura to "take" had his signature all over it; it was the one that met his eyes when he looked out of the window of his attic workroom. Niépce installed a camera obscura in this window many times in 1816, and his letters to Claude, his brother and sometime collaborator, are full of references to the courtyard, and of laborious attempts to align his photographs with it. "I have made the experiment *in accordance with the procedure known to you*," he wrote in May of that year, ". . . and I saw on the white paper all of the bird house which one can see from the window, also a faint image of the casement which was less illuminated than the outside objects."[8] "The white mass, which shows only dimly at the right of the bird house . . . is the pear tree . . . and the black spot above the tree top is an opening between the branches," he wrote three weeks later.[9]

Niépce also referred to the photographs that he hoped to extract from the camera obscura as "view-points" ("*points de vue*").[10] This phrase recalls both the vanishing point in a perspectival painting and the fixed position from which such a painting becomes intelligible—a position that affords the person who steps into it a powerful sense of mastery.[11] It also anticipates Hollywood cinema's imputation of what the viewer sees to a fictional look, through the shot/reverse shot. And the way in which Niépce talks about the camera obscura indicates that he did indeed regard it as his ocular representative; he mentions the lens far more often than the screen or the darkened chamber, and he describes it as an "artificial eye."[12] A striking passage in one of Claude's letters shows that this was a shared assumption. "I have read and re-read the interesting details you kindly transmitted to me . . . ," he wrote Nicéphore in 1822, "attentive and following with your eyes the admirable work of light; and *I thought I myself saw a 'point de vue' which I had great pleasure in remembering*."[13]

Niépce's 1816 experiments with the camera obscura produced several negatives of the buildings onto which his studio window opened, but they vanished shortly after he removed them from the apparatus. He called these short-lived photographs "retinas" ("*rétines*"), presumably because they resembled an afterimage.[14] This formulation also recalls the retinal image, the concept through which Kepler theorized the opacity of human vision.[15] Sometime in the summer of 1826 or 1827,[16] Niépce coated a polished pewter plate with a mixture of bitumen of Judea and lavender oil, put the plate in a camera obscura, and once again installed the device in his workroom window. When he removed it eight hours later, the plate was blank, but after he washed it with lavender and white petroleum, a direct positive image of the adjacent structures and

buildings appeared on its shiny surface, and the bitumen hardened into an enduring image.[17] It was with this image, Georges Potonniée and the Gernsheims declare, that photography began.[18]

But *View from the Window at Le Gras* wasn't the result for which Niépce had been waiting, either. Because of the length of the exposure, sunlight illuminates the buildings from both sides, and the photograph also shows us the traces inscribed on the pewter plate during the intervening period. It is the precipitate of eight hours of continuous change, and this process occurred in tandem with, and as a consequence of, another metamorphosis—one transpiring in the external world. *View from the Window* thus not only loudly proclaims itself to be a "photogenic drawing," but also recalls Leonardo's dynamic analogies.[19]

Since Niépce didn't know what light had inscribed on the pewter plate until he took the plate out of the camera obscura and washed it with lavender and

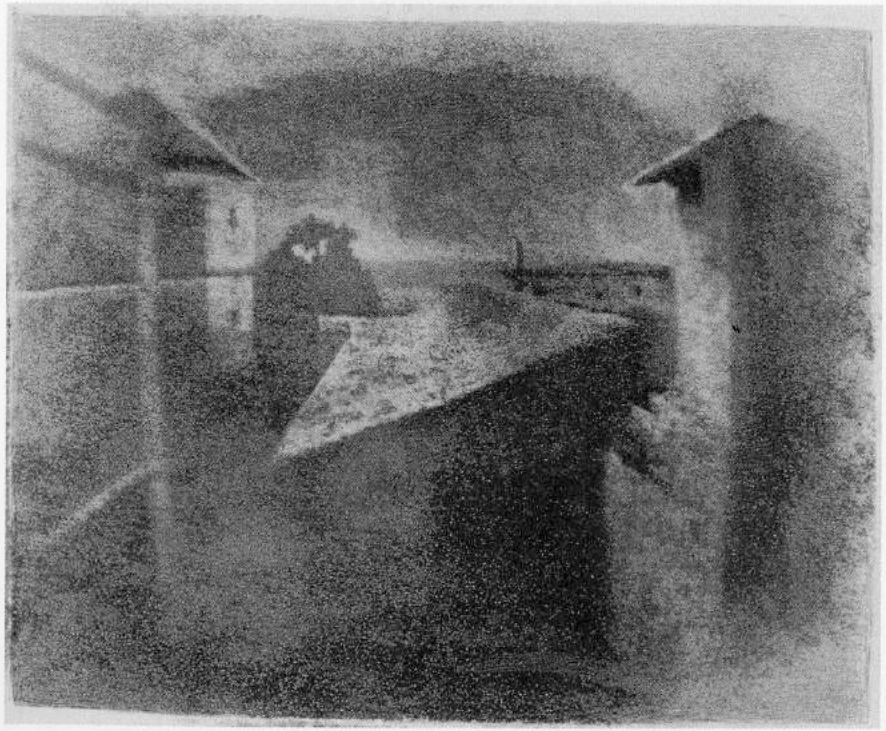

Figure 23. Nicéphore Niépce, *View from the Window at Le Gras*, ca. 1826, as enhanced by Helmut Gernsheim, 1952. Silver-gelatin print and watercolor from original heliograph on pewter. Courtesy of the Harry Ransom Center at the University of Texas at Austin.

white petroleum, his decision to remove it after eight hours was completely arbitrary. It would also have been arbitrary if he had been able to witness what was happening, since the "view" that traced its picture on the shiny surface never assumed a final shape. Niépce must have realized at some point that his difficulties had less to do with chemistry than with the sky and buildings, because he reordered his priorities. His first goal was no longer to make a reproducible image, he announced in an 1828 letter. It was, rather, to replicate a different prototype: the *world*. Only then could he resume his earlier quest. "My sole object [is] to copy nature with the greatest fidelity, [and it is] to that which I attach myself exclusively," he told the engraver Lemaître, "for only when I have succeeded in this can I seriously begin to tackle the various fields of application of which my discovery is capable."[20] But Niépce still didn't understand the basis of his difficulties; he thought that all he needed was a better lens.[21]

Daguerre joined forces with Niépce in 1828, and continued experimenting with photography after the latter's death. He encouraged his partner to focus his reproductive efforts on nature, rather than preexisting images,[22] and he also practiced what he preached; the daguerreotype offers a "faithful" but unreproducible image of its referent. But Daguerre was not really interested in collaborating either with Niépce or with nature.[23] He wanted to establish himself as the source of the photographic image, and he believed that the best way to do this was "to arrive at such rapidity that the impression could be produced in a few minutes, so that the shadows in nature should not have time to alter their position,"[24] and so much detail that the viewer would believe himself to be looking at solid and recognizable forms. "In order to obtain a perfect image of nature only three to thirty minutes at the most are necessary . . . ," he writes. "By this process, without any idea of drawing, without any knowledge of chemistry and physics, it will be possible to take in a few minutes the most detailed views, the most picturesque scenery."[25]

This account of the daguerreotype clearly tapped into the unconscious desires of some of his reviewers, because they not only repeated his claims but hyperbolized them. "M. Daguerre shows you the plain plate of copper," Hippolyte Gaucheraud enthused. "He places it, in your presence, in his apparatus, and, in three minutes, if there is a bright summer sun, and a few more, if autumn or winter weaken the power of its beams, he takes out the metal and shows it to you, covered with a charming design representing the object towards which the apparatus was turned. Nothing remains but a short mechanical operation—of washing, I believe—and the design, which has been obtained in so few moments, remains unalterably fixed, so that the hottest sun cannot destroy it."[26] And Sir John Robison declared, "The new art has been discovered to fix these

wonderful images, which have hitherto passed away volatile—evanescent as a dream—to stop them at our will, on a substance finely sensible to the immediate action of light, and render them permanent before our eyes, in traces represented by tints in perfect harmony on each point, with different degrees of intensity."[27]

As another reviewer makes painfully evident, this fantasy of "immediate action" and "absolute fixation" was yet another iteration of the Cartesian dream. But the dream had a new narrative—one that acknowledged the challenges posed by photography. Yes, there is indeed a world, this narrative goes, and it has an "eye," called the sun, that is the "all-powerful agent of a new art." However, this seemingly omnipotent force is our "willing and obedient slave"; it performs all of the physical labor, while deferring to our aesthetic judgment. If we wish a monument to "appear in relief, free from any surrounding effect that may lessen its noble effect," it will make the monument stand forth, "isolated as the column in the Place Vendôme." We can also "obtain" all of the other "effects" that we desire to create through the "same admirable process," from "the earliest dawn" to "twilight's close."[28]

Figure 24. Louis Daguerre, *Notre-Dame and the Ile de la Cité*, ca. 1838. Daguerreotype. Courtesy of the Harry Ransom Center at the University of Texas at Austin.

But Daguerre did not succeed in preserving any of his photographs until 1837, and those that survive are far from "fixed." The daguerreotype has to be angled to be seen, and it shifts in certain positions from a positive to a negative image. It is also extremely fragile, as was already apparent to Daguerre's contemporaries.[29] Since it is produced through the impress of light on a silver-plated surface, rather than the copper beneath this plating, it can be easily rubbed away, and it must be framed behind sealed glass to keep the silver from oxidizing.[30] An odd complaint also surfaces in some of the reviews. "Motion," as one commentator puts it, "escapes [Daguerre], or leaves only vague and uncertain traces."[31] Three of the reviewers who level this complaint attach it to a particular set of photographs—those devoted to the Boulevard du Temple.

In 1839,[32] Daguerre attempted—perhaps consciously, but in all likelihood unconsciously—to remake *View from the Window*, with different protocols. Like Niépce, he installed a camera obscura in the upper-story window of his workroom, in order to "take" the "view" that he saw when he looked out of it. Like his predecessor's experiment, his also began in the early morning and ended in the late afternoon. But rather than pointing his camera obscura at a cluster of buildings on a country estate, Daguerre pointed it at the Boulevard du Temple, one of the busiest streets in Paris, and instead of producing one photograph, he produced three.[33] He also made each of them at a different time of day—the first in the early morning, the second at noon, and the third in the late afternoon. Although his exposures were long by today's standards, they were infinitesimal by comparison with Niépce's; according to one reviewer, they lasted only thirty seconds.[34] Each daguerreotype is consequently the precipitate of a very small part of the period that they collectively represent. Finally, this period is more symbolic than real; two of the photographs were made on one day, and the third on another day.

Daguerre repeated this experiment with two other locations the following year: the Place de la Concorde and the Tuileries Palace.[35] Neither series has survived, but we have two contemporaneous descriptions of the first. "In one of these designs, you may almost tell the hour of the day," the first reviewer writes. "Three views of the [Luxor Obelisk] are taken; one in the morning, one at noon, and the other in the evening; and nobody will mistake the effect of the morning for that of the evening."[36] The Luxor Obelisk was immediately recognizable in all three "views" of the Place de la Concorde, the other claims, and "the effect of the morning light [was] distinctly discernible from that of the evening, though the sun's altitude, and consequently the length of the shadows, [were] the same in both."[37] We can see from these descriptions what Daguerre was hoping to accomplish with the Boulevard du Temple series. By replacing a

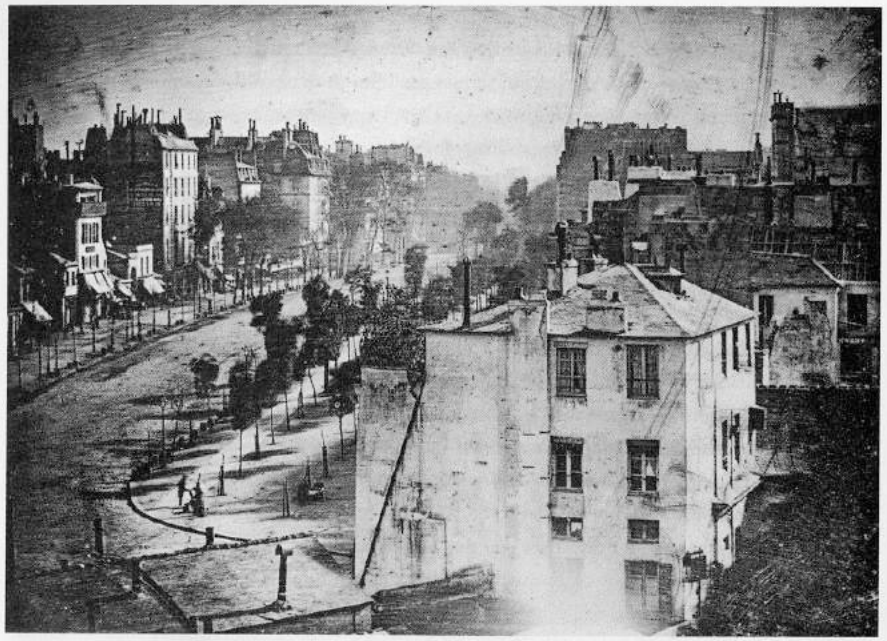

Figure 25. Louis Daguerre, *The Boulevard du Temple*. 1838. Daguerreotype. Courtesy of the Bayerisches Nationalmuseum (inventory no. R 6312.1-8).

photograph created through eight hours of uninterrupted exposure with three photographs representing the beginning, middle, and end of a hypothetical day, he was trying to rationalize time, and solidify form.

Daguerre seemed to have achieved these goals in the Place de la Concorde series, at least in the minds of his reviewers. No one, though, could determine the time of day from the Boulevard du Temple photographs, nor did they correspond to what Daguerre's contemporaries were used to seeing when they ventured into his neighborhood. Samuel Morse visited Daguerre's studio shortly after he made the daguerreotypes, and described the first of them in a letter to his brother. He talks about the mysterious absence of vehicles and crowds in a location that was normally overflowing with both, and the equally mysterious presence of part of a human figure in the lower left frame. "The Boulevard, so constantly filled with a moving throng of pedestrians and carriages, was perfectly solitary, except an individual who was having his boots brushed," he writes. "His feet were compelled, of course, to be stationary for some time, one being on the box of the boot-black, and the other on the ground. Consequently his boots and legs are well defined, but he is without

body or head, because these were in motion." Morse concludes that "objects moving are not impressed."[38]

Gaucheraud provides a similar reading of the last photograph in the series, which was also devoid of vehicles and crowds, and which apparently contained two horses, one of whom—like the human figure in the first photograph—was only partially present. (I say "apparently" because this photograph is lost.) "Nature in motion is not represented or at least not without great difficulty . . . ," he writes. "In one of the views of the Boulevards . . . all that was walking or moving does not appear in the design; of two horses in a hackney coach on the stand, one unluckily moved its head during the short operation; the animal is without a head in the design." Since photographers need their subjects to remain stationary for an extended period of time, Gaucheraud concludes, they should focus on things that are inherently motionless, like inanimate nature and architecture.[39]

Morse's preoccupation with the tiny human figure—or, as has been more recently argued, two tiny human figures[40]—in the left frame of a photograph in which so many other things are happening is odd. It is even stranger to find Gaucheraud attributing immobility to architecture when discussing this series, since the most prominent thing in the two surviving photographs is the building in the foreground, and it is far from still. Not only does it occupy a slightly different position in each photograph, but it also moves in multiple directions within them. In the first daguerreotype, the building both emerges from and retreats back into the mist in the background and at its base, and in the second it simultaneously rises out of the darkness that engulfs its lower half and sinks back into it. This is a striking instantiation of the kind of movement I discussed in chapter 1: of the "coming forward" or "presencing" of the world through self-presentation. It also reminds us that every disclosure is a partial concealment—that nothing ever stands fully exposed before us.

Although the building in the foreground of the Boulevard du Temple series is manifestly the same "body" in both daguerreotypes, it also looks very different in the second daguerreotype than it does in the first; it is squatter, its windows are larger, and its façade has three levels instead of two. I take the word "body" from Henri Bergson, who uses it to emphasize the "evolutionary" nature of all phenomena. Everything "changes at every moment," he writes in *Creative Evolution*. It also does so "*without ceasing*" (my emphasis). There is, consequently, no such thing as a form; there is only *formation*. These infinitesimal metamorphoses are, however, imperceptible to the human eye. When "successive images" differ slightly, we consider them all as "the waxing and waning of a single *mean* image," and when a body alters enough to

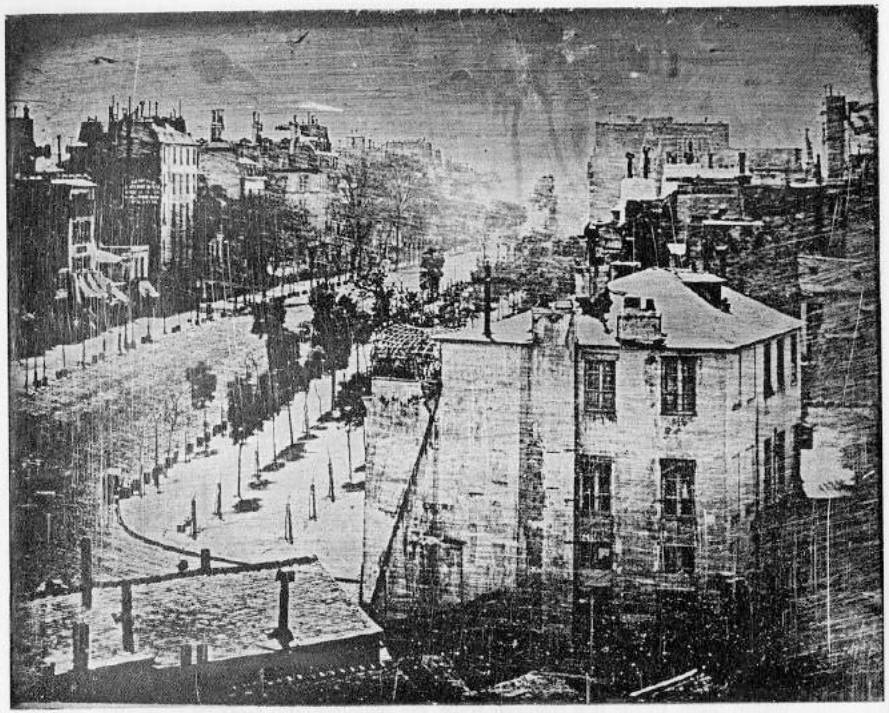

Figure 26. Louis Daguerre, *The Boulevard du Temple*. 1838. Daguerreotype. Courtesy of the Bayerisches Nationalmuseum (inventory no. R 6312.1–8).

"overcome the inertia of our perception," we say that it has "changed form."[41] We also have a vested interest in not perceiving them, since they are epistemologically unmooring. But the movement that escapes *us* is highly visible in the Boulevard du Temple photographs—and not just through the building in the foreground. Through their partial appearance, the man and the horse help us to see that they, too, are less beings than "becomings," and one cannot look at the daguerreotypes for very long without feeling the ground shifting beneath one's feet. This part of Paris was unrecognizable after Baron Haussmann finished "renovating" the city.

There is also another kind of movement in the Boulevard du Temple daguerreotypes, and that is the one through which they emerged. The industrialization of photography has made this movement almost impossible to see, but it was hard to miss in the late 1830s and early 1840s, since exposures were not only long but manifestly developmental. Some pictorial elements appeared earlier than others, and continued evolving until the photograph was chemically

stabilized. The photographer consequently had to decide whether to underexpose the "slow" colors so that the "speedy" ones would not be overexposed, or to overexpose the latter so that the former would not be underexposed. Although Gaucheraud does not recognize this movement *as movement*, he describes it brilliantly. "Trees are very well represented [in the Boulevard du Temple daguerreotypes]," he writes "[but] their color . . . hinders the solar rays from producing their image as quickly as that of houses, and other objects of a different color." And this "causes a difficulty for [the] landscape, because there is a certain fixed point of perfection for trees, and another for all objects the colors of which are not green. The consequence is, that when the houses are finished, the trees are not, and when the trees are finished, the houses are too much so."[42]

Robison provides both the most detailed and the most perceptive account of the Boulevard du Temple photographs. Like Morse, he notes the absent crowds and the partial appearance of the man who is having his shoes shined, and explains both through the length of the exposure, but instead of concluding that "objects moving are not impressed," he writes that "vacillating objects make indistinct pictures."[43] This formulation makes room for the ceaseless metamorphosis of the building and the man, and the simultaneity within the photograph of presence and absence, and appearance and disappearance.

Robison also addresses all of the developmental aspects of the series: the gradual emergence of the buildings at dawn, the slow appearance of the image on the photographic plate, and the modulation of light over the course of the day. "A set of three pictures of the same group of houses, one taken soon after sunrise, one at noon, and one in the evening; in these the change of aspect produced by the variations in the distribution of light, was exemplified in a way which art could never attain to," he observes. "One specimen was remarkable from its showing the progress made by light in producing the picture. A plate having been exposed during thirty seconds to the action of the light and then removed, the appearance of the view was that of the earliest dawn of day; there was a grey sky, and a few corners of buildings and other objects beginning to be visible through the deep black in which all the rest of the picture was involved."[44] This passage restores the temporal continuum that Daguerre works so hard to interrupt, and de-substantializes the Boulevard du Temple.

IN 1834 AND 1835, Talbot produced a number of negative photographs by sensitizing numerous pieces of paper with sodium chloride and silver nitrate, inserting them in tiny camerae obscurae, and exposing the devices to the sun for half an hour.[45] Like Niépce's first successful camera photograph, Talbot's features a window in his house: the oriel window in the south gallery of Lacock Abbey.

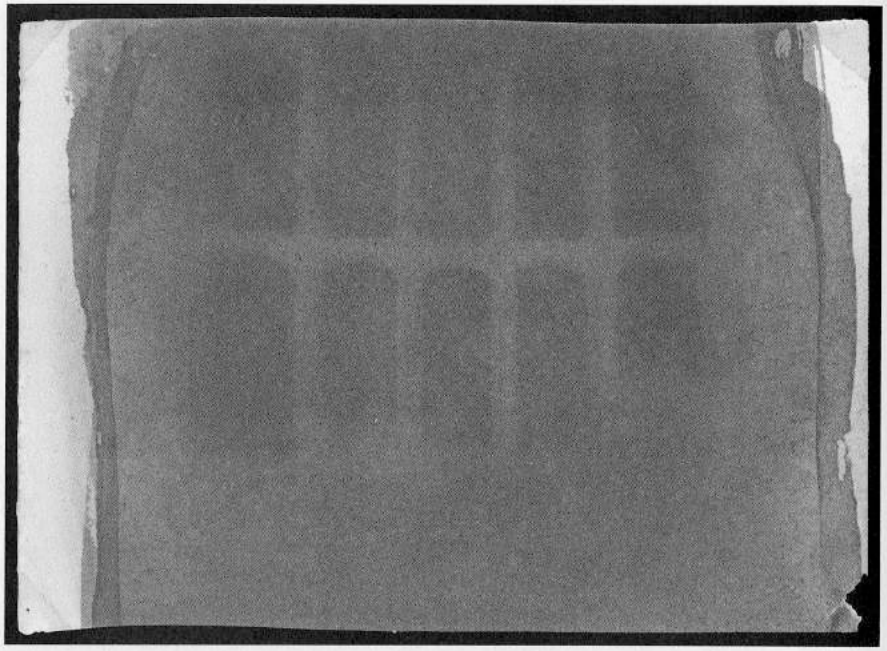

Figure 27. Henry Fox Talbot, *The Oriel Window, South Gallery, Lacock Abbey*, ca. 1835. Photogenic drawing negative.

However, rather than offering a view *from* this window, it offers a view *of* it. It also differs from Niépce's first photograph in another significant way: it can't be attributed to Talbot. The camera obscura within which the photographic plate was exposed to light sat on the mantelpiece across from this window, a position from which only the fireplace could have "looked."[46]

In 1840, Talbot discovered that an image had appeared on a piece of paper that had been in the camera obscura for only a short time, and this discovery helped him develop a new process. By sensitizing his paper with silver nitrate and potassium iodide, moistening it with a solution of acetic acid, silver nitrate, and gallic acid shortly before using it, removing it from the camera obscura when there was only a latent image, and then bathing it in a gallic silver nitrate solution, he dramatically reduced his exposure times—sometimes to as little as thirty seconds. He called the images that resulted from this new and improved process "calotypes."

But Talbot found it almost impossible to retain the images that emerged from his photographic experiments. His early photographs blackened or faded when exposed to light,[47] and although he had better luck with his calotypes,

most of which he "fixed" with "hypo," there were still numerous casualties. The images on many of the plates in *The Pencil of Nature* vanished, and a reviewer of the 1862 International Exhibition wrote that some of the calotypes that were exhibited there had "fad[ed] before the eyes of the nations assembled."[48]

Talbot's surviving photographs are also labile in another sense, one that recalls both *View from a Window*, and the Boulevard du Temple daguerreotypes. They seem—as Gail Buckland puts it—to be "in a state of evolution, of slowly being created by dancing rays of light."[49] And although Talbot was alarmed by the blackening and fading of his photographs, he loved watching the latent image slowly emerge on a sheet of sensitized paper after he removed it from the camera obscura. "I know of few things in the range of science more surprising than the gradual appearance of the picture on the blank sheet," he confided in a February 19, 1841, letter to the editor of the *Literary Gazette*.[50] Talbot also saw this process as a continuation of what happened inside the camera obscura, and attributed it to the same agency. His photographs were not only drawn with the pencil of nature, they were also "self-developing." "One day last September,

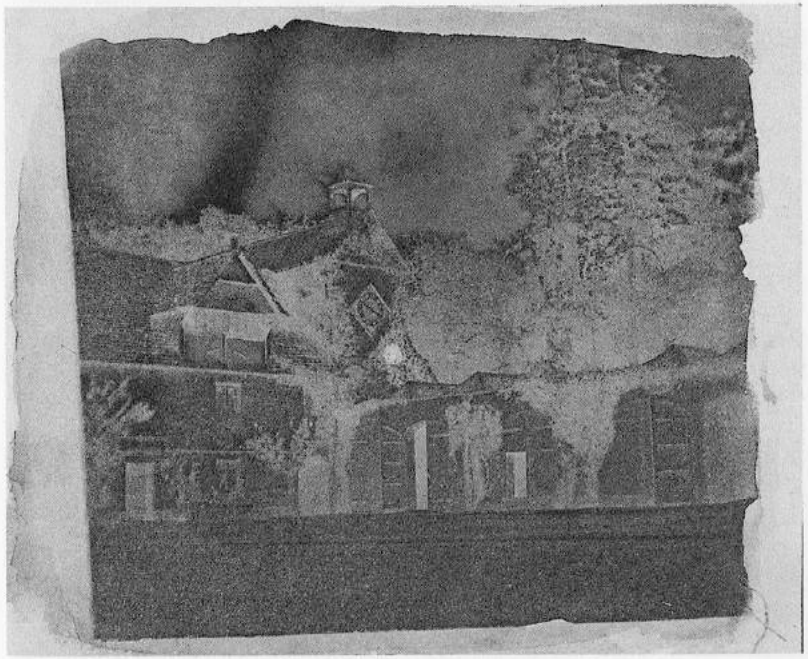

Figure 28/Colorplate 3. Henry Fox Talbot, *The Stable Court, Lacock Abbey*, ca. 1841. Calotype negative. Courtesy of the National Media Museum/SSPL.

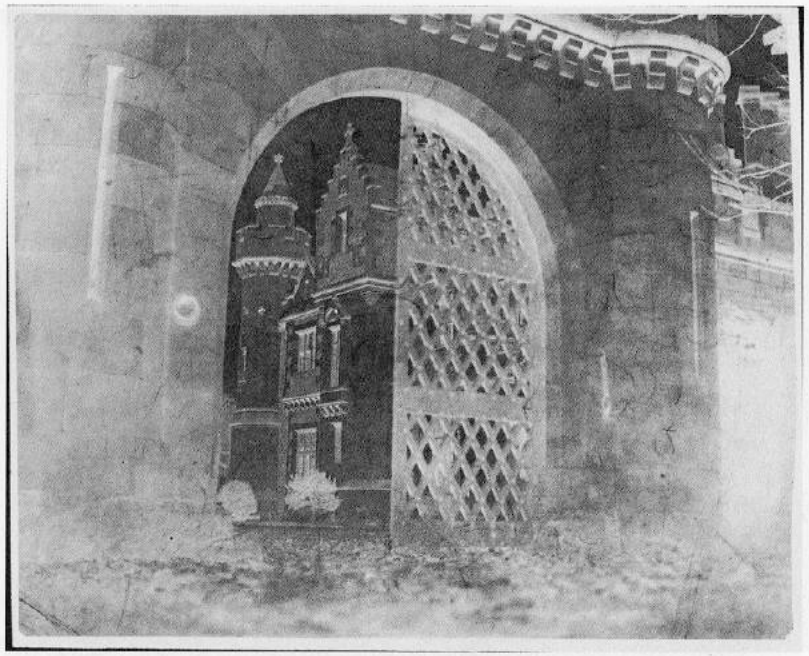

Figure 29/Colorplate 4. Henry Fox Talbot, *Entrance Gate, Abbotsford*, 1845. Calotype negative. Courtesy of the National Media Museum/SSPL.

I had been trying pieces of sensitized paper . . . in the camera obscura, allowing them to remain there for only a short time," he recounts in the same letter. "One of these papers was taken out and examined by candlelight. There was little or nothing to be seen upon it and I left it lying on a table in a dark room. Returning sometime after, I took up the paper and was very much surprised to see upon it a distinct picture . . . the only conclusion that could be drawn was that the picture unexpectedly *developed itself* by a spontaneous action."

Sir David Brewster provides a similar account of Daguerre's procedure in "Photogenic Drawing, or Drawing by the Agency of Light." He characterizes the transformation of a latent daguerreotype into an actual one as a reflexive process, and identifies the people, places, and things that are disclosed through it as the agents of this auto-development. "After remaining a number of minutes, depending on the intensity of the light, the plate is taken out of the camera," he observes, "and placed in what is called a mercury box. There it is exposed to the vapor of mercury. . . . and, after a certain time, the operator, looking through a little window in front of the box, observes the landscape,

or figures, gradually *developing themselves* on the surface of the plate."[51] This description, which applies with uncanny precision to the Boulevard du Temple series, locates the daguerreotype's self-development in an ongoing "now" that is more akin to the temporality of the camera obscura's images than to the one we usually attribute to the photographic image.

In an important passage in *The Pencil of Nature*, Talbot confesses that he is constantly seeing new things in his surviving calotypes, suggesting that they went on developing after they were chemically stabilized. "It frequently happens . . . that the operator himself discovers on examination, perhaps long afterwards, that he has depicted many things that he had no notion of at the time," he writes. "Sometimes inscriptions and dates are found upon the buildings, or printed placards, most irrelevant, are discovered upon their walls: sometimes a distant dial-plate is seen, and upon it—unconsciously recorded—the hour of the day at which the view was taken."[52] He also makes another astonishing claim: that faded photographs can be "revived" by re-exposing them to the chemicals through which they were developed, and that when they reappear, they often contain new things.[53]

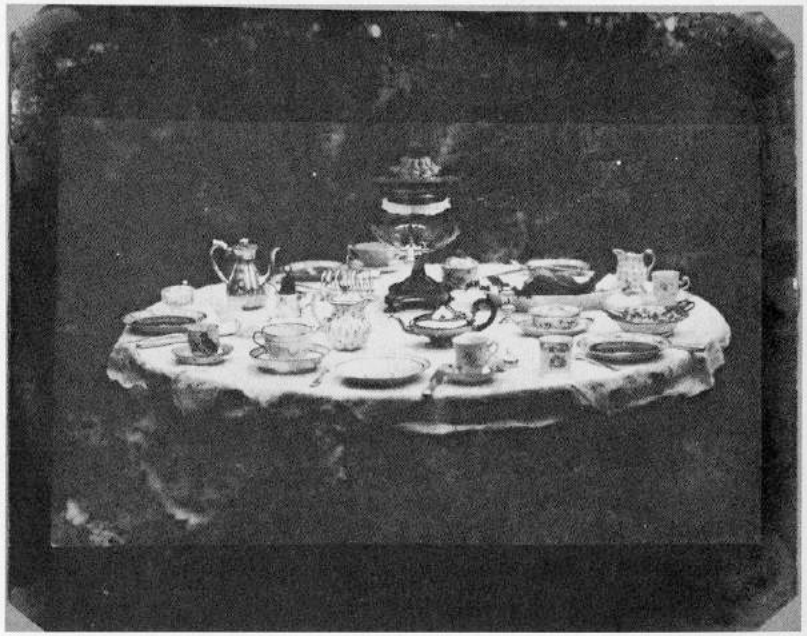

Figure 30. Henry Fox Talbot, *Table set for tea*, ca. 1843. Salted paper print. Courtesy of the National Media Museum/SSPL.

Once again the vehicle of this continuing development is analogy, but of a kind that I have not yet described. Like the analogies through which *View from a Window* and the Boulevard du Temple series were created, those through which Talbot's photographs first emerged were forged in the here and now, and the image evolved in tandem with the world. The analogies through which his photographs continued to develop after they had been chemically stabilized were trans-temporal; they connected an image from one moment in time with an image from another. As Talbot suggests, some of these analogies were psychic. "A casual gleam of sunshine, or a shadow, thrown across [the viewer's] path, a time-withered oak, or a moss covered stone may awaken a train of thought and feelings, and picturesque imaginings," he writes in another passage from *The Pencil of Nature*.[54] Others took a material form, and it was usually during the reproductive process that this material self-development began.

Figure 31. Henry Fox Talbot, *Winter Trees, Reflected in a Pond*, ca. 1841. Salted paper print. Courtesy of the National Media Museum/SSPL.

AS WE HAVE ALREADY SEEN, Daguerre was not interested in reproduction; his photographs were "one of a kind." Although Talbot invented the process that allowed multiple positive prints to be made from a negative, that was not what drew him to photography either. He was slow to deploy it, and when he finally began to "reverse" his "reversed" images, as he called them, he did so by placing a sheet of sensitized paper directly on the negative, then exposing it to light. Since this procedure had to be repeated every time he wanted a positive print, and nothing about it was standardized, the resulting images are far from identical and he defends their differences in *The Pencil of Nature*.[55]

The only one of the three figures I have discussed in this chapter who thought of photography as a primarily reproductive medium was Niépce. He tried to use it to copy engravings, to "take" what he saw when he looked out of his study window, and—finally—to make prints of *View from a Window*. The first of these attempts led to a few recognizable images, the second to one that is barely legible, and the third to nothing at all. Niépce attributed his inability to reproduce *View from a Window* to the "metallic reflection" of the pewter plate, and thought that he would be able to "obtain a vigorous picture" from a glass plate,[56] but history suggests otherwise. In the years since Niépce removed the photograph from the camera obscura and washed it with lavender and white petroleum, there have been numerous attempts to reproduce it, none of which has succeeded.

In 1827, Niépce went to England to visit Claude, who was gravely ill, and he took *View from a Window* with him. While he was there, he met Francis Bauer, a well-known botanical draughtsman, who encouraged him to write a memoir about his discovery for presentation to the Royal Society. Niépce wrote the memoir, but he was so secretive about his process that nothing came of it.[57] He left *View from a Window* with Bauer when he returned to France, and after Bauer's death it passed through several other hands. It was publicly exhibited in 1885 and 1898, and then passed into obscurity.[58]

Helmut and Alison Gernsheim spent six years trying to track down *View from a Window*, and in 1952 they finally found what they were looking for, in a large trunk in England. When he first saw the photograph, Helmut Gernsheim recounts in his most comprehensive account of this discovery,[59] he thought that he was looking at a mirror in an Empire frame. He went to the window, and angled the plate in various directions, and eventually the image came into view. Astonishingly, given that Gernsheim wrote this essay more than half a century after the industrialization of photography, he attributes its appearance to the courtyard, rather than to Niépce's action, or his own intervention. He also suggests that this self-disclosure happened gradually; the "entire courtyard scene *unfolded itself* in front of my eyes," he observes (my emphasis).[60]

Gernsheim persuaded the owner of the heliograph to donate it to his extensive photography collection, and immediately tried to photograph it, but all that appeared in the resulting images was his camera. He then asked Scotland Yard to help him reproduce it, reasoning that since photographers there were "so expert in detecting invisible spots, scratches, hair, and fingerprints where the eye can see nothing at all," making a copy of a "clearly recognizable image" should be "easy game." When Britain's famous detective agency declined to put its public services to private uses, he turned first to the *Times*, where the project was deemed to be "impossible," and then to the National Gallery, whose highly skilled photographers tried, but failed, to reproduce *View from a Window*. Finally, thinking that the "giants of the photographic industry" would feel "in honor bound to produce a result," Gernsheim approached the Research Laboratory of the Eastman Kodak Company in Harrow, and the director agreed to try. But although the Eastman Kodak technicians worked on the project for three weeks, Gernsheim found the resulting photograph a "gross distortion of the original," and prohibited its publication until 1977.[61]

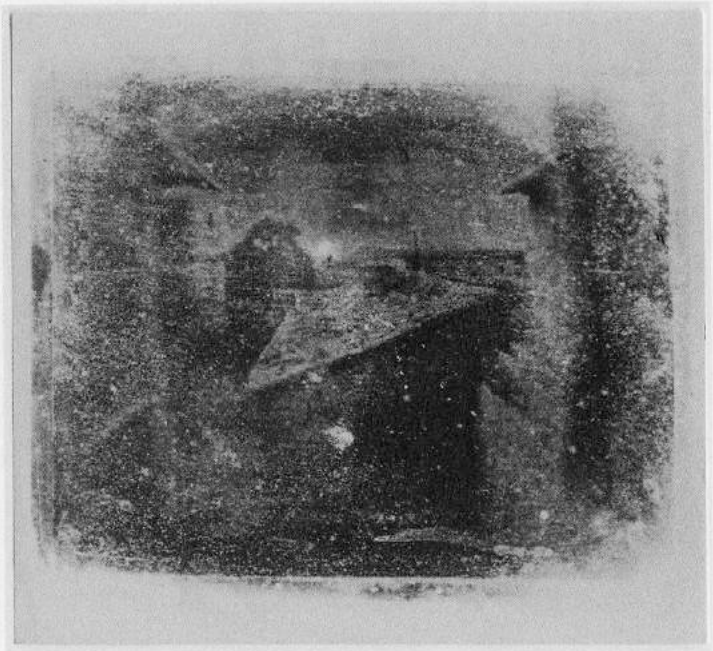

Figure 32. *View from the Window at Le Gras* as reproduced by the Kodak Research Laboratory (Harrow, UK), 1952. Silver-gelatin print from original heliograph on pewter. Courtesy of the Harry Ransom Center at the University of Texas at Austin.

As we can see from the first institution to which he turned for help—Scotland Yard—Gernsheim imputed an evidentiary value to the photographic image. He believed that a photograph of *View from a Window* would preserve this "important document," and he approached the heliograph itself in the same way. "Though Niépce's estate, Gras, was altered to some extent by later owners, the tower (pigeon house) on the left of the photograph still stands, and is in fact *on the left* when looking out of the window of Niépce's attic workroom," he writes in *The History of Photography*, "a proof that a prism was used when taking the photograph. These two facts make it quite certain that the view cannot have been taken before 1826."[62] This passage recalls those in which Niépce tried to align his photographs with what he saw when he looked out of his workroom window.

In 1963, Gernsheim gave *View from a Window* to the Harry Ransom Center at the University of Texas, Austin, and in June 2002, the center sent it to the Getty Conservation Institute to be examined and reproduced. The institute's technicians adopted an even more forensic approach to the

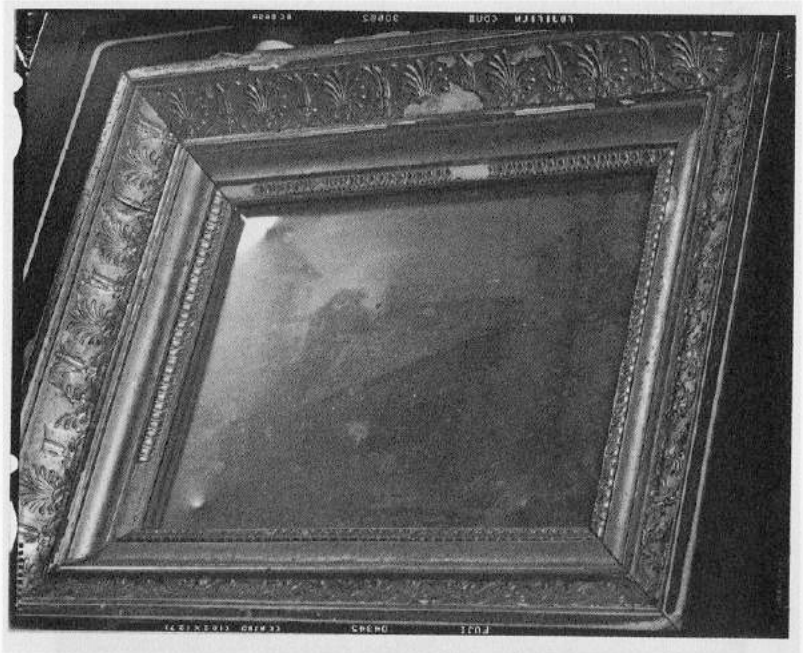

Figure 33/Colorplate 5. *View from the Window at Le Gras* in its original frame. Courtesy of the Harry Ransom Center at the University of Texas at Austin.

photograph. They spent "a day and a half with the original heliograph in their photographic studios in order to record photographically and digitally all aspects of the plate." They also documented it "under all manner of scientific lights, including ultraviolet spectra," and "produced new color film and digital/electronic copies of the plate, in an attempt to reveal more of the unretouched image while still providing a sense of the complex physical state of the photograph."[63] But the digital images that are displayed on the Harry Ransom Center website are no more revealing of the "unretouched image" than the Kodak photograph is.

Gernsheim and the Getty technicians attribute the heliograph's unreproducibility to Niépce's underexposure of the original plate. This explanation, however, is unnecessary, because there is no blame to apportion. The Kodak photograph and all of the images that have appeared on the Harry Ransom Center website are not "bad copies," or even "representations of representations";[64] rather, they are some of the analogies through which the heliograph has continued to self-develop. This creative evolution began with a non-photographic image, and gained momentum through another unholy alliance: a "manipulated" photograph of an over-painted photograph.

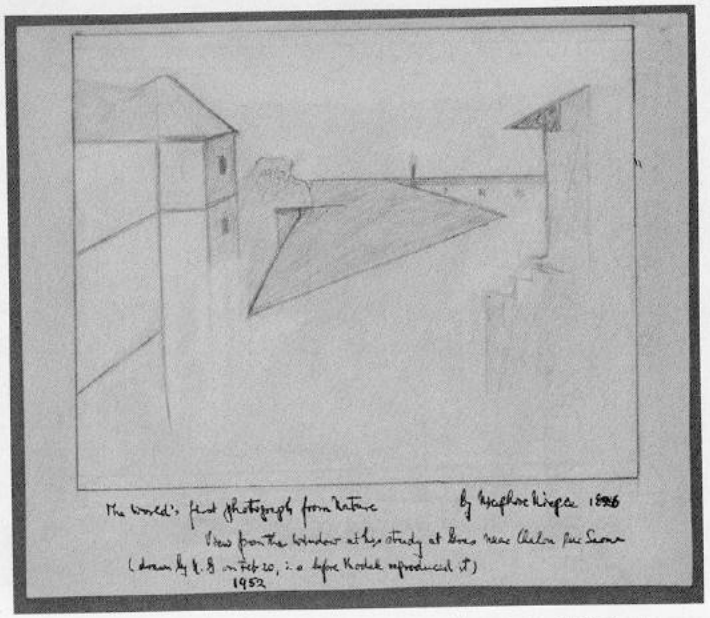

Figure 34. Helmut Gernsheim, drawing of *View from the Window at Le Gras*, 1952. Pencil on paper. Courtesy of the Harry Ransom Center at the University of Texas at Austin.

When Gernsheim realized that he would have to surrender the heliograph to a "research laboratory" in order to have it reproduced, he decided to make a drawing of it on the same scale, so that he would have a record of the "crucial document" if something happened to it. We do not usually attribute evidentiary value to a drawing, and this one warrants no exception. Instead of an elusive image hidden in the illusionistic depths of a shiny pewter plate, it is a legible sketch on a flat sheet of non-reflective paper. It also privileges line over mass, and reverses the photograph's tonal values. But this does not mean that the heliograph and the drawing are two separate images. The shapes in the drawing echo those in the heliograph, and the heliograph also resembles the drawing in some surprising ways. *View from a Window* would be as useless in a court of law as the drawing; it corresponded *with* the ceaselessly changing scene outside Niépce's window on the day it was made, rather than *to* it. It was also drawn with a "pencil": the pencil of light. These are aspects of the photograph that we would not see without Gernsheim's drawing. *View from a Window* reasserts itself as heliograph—a gift from the world to us—in an astonishing way: through an image drawn with a human hand.

When the Kodak technicians failed to produce a satisfactory copy of *View from a Window*, Gernsheim had nowhere else to go, so he and his wife spent nearly two days applying pointillist watercolor dots to one of their prints, so as to make it more representative of the heliograph. When he photographed this over-painted photograph, he "held back the sky, the roof of the barn, and a few other features that were bright in the original, not black." Gernsheim was keenly aware of the differences between the heliograph and this image. His photograph of the over-painted photograph is "a more uniform and clearly defined image" than the Kodak print, he writes in "The 150th Anniversary of Photography," but its "pointillistic effect" is "completely alien" to Niépce's "medium," which is "as smooth as a mirror."[65] However, he nevertheless called it the "rare original" in his 1952 account of his study, and mandated that it be the heliograph's primary representative for twenty-five years.

Much later, after this "ruse" was discovered, Gernsheim responded to his critics in the following way: "Because it became known that I had touched up Kodak's reproduction some people ignorant of the original plate, misconstrued my intention, believing I had been trying to improve on Niépce, whereas I had merely been trying to improve upon Kodak, to restore Niépce."[66] The word "intention" figures prominently here; it is, indeed, the pivot on which his defense turns. Gernsheim's detractors imputed the wrong intention to him, he argued, and he was sure that when they realized that he was merely trying to reassert Niépce's intention, they would exonerate him.

But not only can we never fully know what anyone else intends, we can never fully know what *we* intend. Gernsheim was also contending with another intentionality, one that militated against a return to the "original": the photograph's own impulsion toward a further self-development. This impulsion was the driving force behind the many transformations to which Gernsheim subjected *View from a Window*. I say "many" because the drawing and the over-painted photograph weren't the only analogies generated by Gernsheim. The entire process began with a mental image or group of images, and when Gernsheim touched up the photograph, he analogized this analogy. The over-painted photograph is—as Barbara Brown discreetly puts it—"his approximation of how he felt the original should appear in reproduction."[67]

Even now, it is to this image that most of us turn when we want to look at *View from a Window*, and for good reason. Like the heliograph, it evolved slowly, through the gradual accumulation of marks. In the former case, as in the latter case, there was no necessary end point to this evolution. Finally, although the heliograph's "image layer" was long assumed to consist of a solid coat of bitumen, the Getty's "XRF analysis" showed that it is actually a random pattern of bitumen "microdots."[68] Since Gernsheim died long before the Getty analyzed the heliograph, he never knew about these microdots, but they surfaced through his dots of watercolor paint, like an image in a developing bath.

In spring 2013, an "interactive" version of *View from a Window* appeared on the Harry Ransom Center's website. It is a digital composite of two other images: Gernsheim's drawing, and the most frequently exhibited of the center's "high-tech" photographs of the heliograph. The former is superimposed on the latter, and used to divide it into identifiable segments. If one clicks on a segment, as one is invited to do, its outlines light up with an orange glow, and the pertinent information appears to the left of the image (e.g., "bake house roof, no longer standing"). This is a continuation of the forensic project begun by Niépce and renewed by Gernsheim and the Getty technicians. But once again another intentionality also makes itself felt. Although the two composited images echo each other, they do not merge. Some of the lines of the superimposed diagram extend beyond or cut into the shadowy shapes of the underlying buildings. These discrepancies prevent the image that they both inhabit from forming a seamless whole. The "interactive" version of *View from a Window* is consequently manifestly analogical, and it links chemical photography to digital photography, as well as to drawing.

A 2005 work by Joan Fontcuberta—*Googlegram: Niépce*—is another installment in this ongoing story, and the one with which I will conclude my own narrative.[69] From a distance, *Googlegram: Niépce* looks like a blown-up, slightly

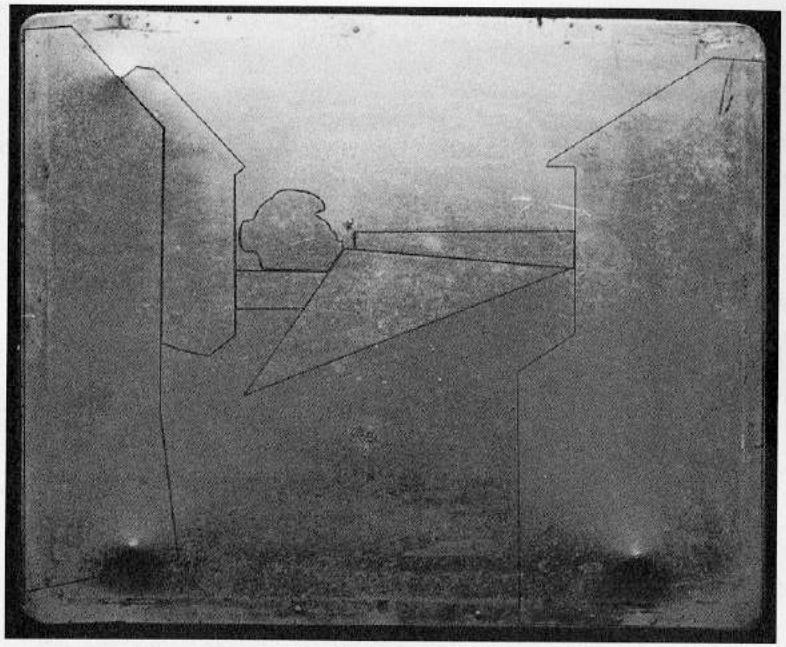

Figure 35/Colorplate 5. *View from the Window at Le Gras* with Gernsheim's pencil drawing superimposed. Courtesy of the Harry Ransom Center at the University of Texas at Austin.

colorized version of Gernsheim's over-painted photograph. As one approaches the work, though, it begins to morph. First the image becomes less resolute, then it turns into an abstract picture, and eventually it dissolves into a vast mosaic of tiny jpegs. There are far more images here than our eyes could ever see, even if we were to spend the rest of our lives looking at them, making *Googlegram: Niépce* a powerful reminder of the limits of human vision, and the inexhaustibility of the perceptual world. The work also challenges our sovereignty in another important way: by exposing us to a multitude of other intentionalities.

Two of these intentionalities are computational. Fontcuberta begins a Googlegram by locating an image that is "an icon of our time," and that is linked to one or more words. He then conducts a Google image search with this word or set of words, and reconstitutes the iconic image with the jpegs to which this search leads through a freeware photomosaic program.[70] The search part of this process ignores both the visual qualities of the images it finds and their affinities to each other; it is relentlessly linguistic. But it also treats words as classificatory units, rather than as sources of meaning or one of the "houses" of Being. It is thus as impervious to the complexity of the *words* with which

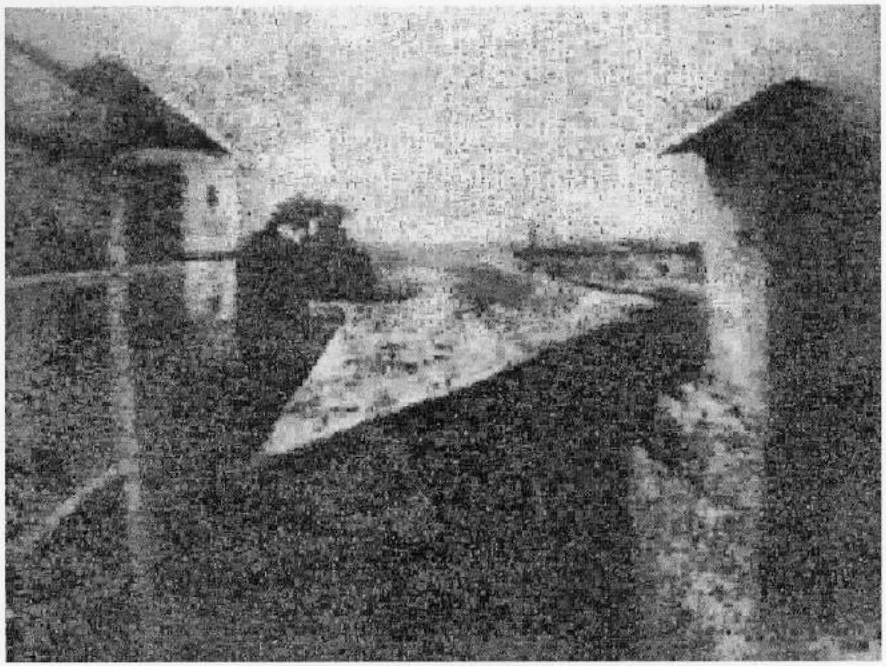

Figure 36/Colorplate 6. Juan Fontcuberta, *Googlegram: Niépce*, 2005. Chromogenic print. Courtesy of the artist.

it searches as it is to the *images* it finds, and this leads to all kinds of errors, or what Fontcuberta calls "archive noise."[71] Although the photomosaic program is also relentlessly single-minded and indifferent to the images with which it works, its "logic" is visual, instead of verbal. It arranges the jpegs strictly according to their "chromatic value and density."[72]

The iconic image that Fontcuberta refashions in *Googlegram: Niépce* is of course Gernsheim's over-painted photograph, and he searched for its 10,000 jpegs with the words "photo" and "foto." Since *View from a Window* is often called "the first photograph," on the Internet, as in the classroom, there is an unusually tight connection between it and the search words, but since every image on the Internet is a digital photograph, the search also encompassed all of them. The photomosaic program forged similar links between the over-painted photograph and these digital photographs. *Googlegram: Niépce* is a photograph constructed out of 10,000 smaller photographs, found by searching with the words "photo" and "foto" and assembled by a photomosaic program. There seems to be no room here for anything but these two meaningless and highly reiterative intentionalities, both of which scream "photography."

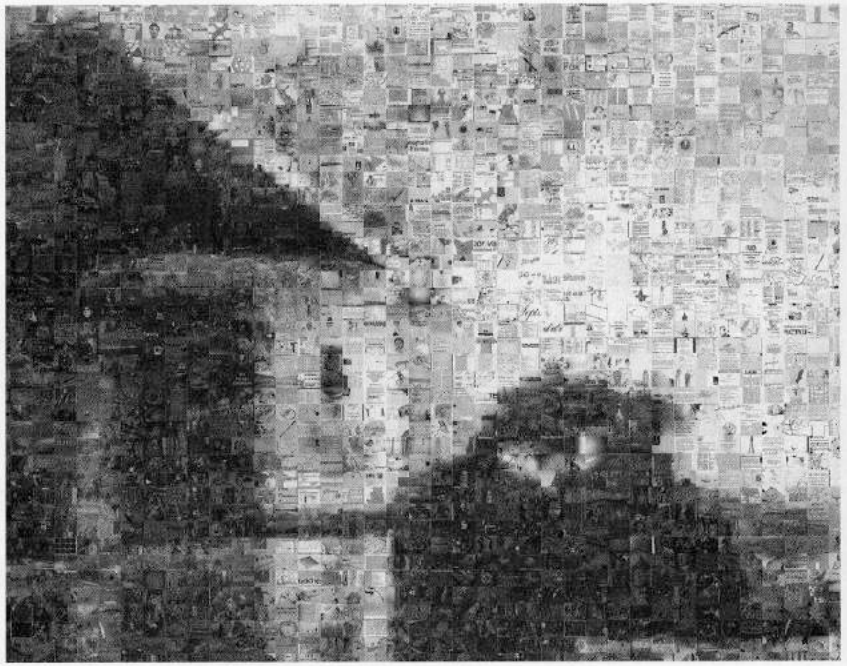

Figure 37/Colorplate 7. Juan Fontcuberta, *Googlegram: Niépce* (detail). Courtesy of the artist.

But although a photomosaic promotes totality from a distance, it works against it up close, as do all mosaics, and Fontcuberta is interested in this double optic. He also believes that the "structure of mosaic"—which dates back to 3000 B.C.—can be found in all photography. Chemical photography is "an irregular mosaic of silver halogen molecules," he writes, a printed image is a "mosaic of dots that inform the photomechanical frame," and a digital photograph is "produced by the grey tint of pixels."[73] As we have already seen, the Getty technicians also found a mosaic when they analyzed *View from a Window*, and Gernsheim brought this mosaic to the surface with his pointillist dots. And not only is *Googlegram: Niépce* itself a mosaic, but its 10,000 jpegs also render both the bitumen dots in Niépce's photograph and the watercolor dots in Gernsheim's over-painted photograph *hyper-visible*.

The photomosaic program also adds something to the mosaic tradition, something that makes room for another kind of intentionality. In a conventional mosaic, Fontcuberta writes, each component is "a pure spot of color without meaning," but in a photomosaic it is a photograph, which "still [has] a meaning by [itself]." This meaning isn't the kind we mobilize by identifying

Figure 38/Colorplate 7. Juan Fontcuberta, *Googlegram: Niépce* (detail). Courtesy of the artist.

what is "in" a photograph; it is, rather, the inexhaustible significance that every being should always have for us, and that the photographic image helps us to experience. The first time I came close enough to see the sea of faces in *Googlegram: Niépce*, I had this experience. I felt that they "expected" my arrival, and that there was a "secret agreement" between them and me. I also knew—with the kind of knowledge that bypasses all reason—that this agreement gave them a "claim" on me.[74]

Although Fontcuberta does not say so, the 10,000 jpegs that make up *Googlegram: Niépce* also have yet another kind of intentionality. When we conduct a Google image search, the search engine looks for the images that have been most frequently linked to our search word. These links, however, have been forged by other Internet users, and reflect their predilections, antipathies, rivalries, and desires, instead of our own. That is why we are so often frustrated by what the search finds. By running his Google image search through a photomosaic program that arranged the results according to chromatic value and intensity, Fontcuberta prevented himself from selecting the jpegs that he liked and eliminating those that he found alien or irritating. He opened the door of his work to images that were tagged and uploaded by thousands of other users, and in which their affects were still lodged. He did so, I believe, because the human psyche is another of the places where the photographic image develops.

about what he most emphasizes in the prologue: the self-delineation of fields, rivers, trees, houses, and cities. He also does so in ways that anticipate Baudelaire's attack on photography. Photography is disturbing, he declares, because it dispenses with the "human hand."

89. Lady Eastlake, "Photography," in *Classic Essays on Photography*, 57.

90. This story is recounted in Matthew 25:1–13.

91. Lady Eastlake, "Photography," in *Classic Essays on Photography*, 57.

92. Morell describes this process in an interview in *A Camera in a Room: Photographs by Abelardo Morell* (Washington, D.C.: Smithsonian Institution Press, 1995), 7.

93. This is how the title reads in *A Camera in a Room*, n.p.

94. This is how the title is listed in *Camera Obscura: Photographs by Abelardo Morell* (New York: Bulfinch Press, 2004), 14.

95. Morell links his project to Talbot's in several important ways. In 1999, he made a black-and-white photograph of what appears to be one of Talbot's own cameras pointed at the illuminated page of a book displaying one of the latter's early contact negatives. Morell called this photograph *Book and Camera: In Memory of Fox Talbot*, and he couples it with a famous passage from *The Pencil of Nature* in a 2004 catalogue. This passage is the one in which Talbot cites as the inspiration for his photographic experimentation the thought "how charming it would be if it were possible to cause these natural images to imprint themselves durably, and remain fixed on paper" (*Camera Obscura: Photographs by Abelardo Morell*, 78–79). In 2003, Morell also made a black-and-white camera obscura photograph in the room in Lacock Abbey in which Talbot invented the negative/positive photographic process, which I am using as the frontispiece to this book. It superimposes an upside-down image of the exterior of the building on the "recto" of this interior. Morell made a similar photograph of the Cloisters at Lacock Abbey. Both of these photographs are published in the same catalogue, on 76 and 80.

96. *A Camera in a Room*, n.p.

97. This is how the title is listed in *Camera Obscura: Photographs by Abelardo Morell*, 16. The catalogue for a recent retrospective offers yet another variant: "*Camera Obscura: Houses Across the Street in Our Bedroom, Quincy, Massachusetts.*" See *Abelardo Morell: The Universe Next Door*, ed. Elizabeth Siegel (Chicago: Art Institute of Chicago, 2013), n.p.

98. Abelardo Morell, "Camera Obscura," http://www.abelardomorell.net/posts/camera-obscura/.

99. Elizabeth Siegel, "Wonderlands," in *Abelardo Morell: The Universe Next Door*, 16–17. The preposition in the title of this work—*Camera Obscura: The Philadelphia Museum of Art East Entrance in Galley #171* ***with*** *a de Chirico Painting*—also attests to the collaborative nature of its production (my emphasis).

100. Siegel, "Wonderlands," 22, and Morell, "Camera Obscura."

101. Morell, "Camera Obscura."

CHAPTER 2

1. For an excellent discussion of the difficulties faced by early photographers, see Larry J. Schaaf, *Out of the Shadows: Herschel, Talbot, and the Invention of Photography* (New Haven: Yale University Press, 1992), 75–151.

2. "Taking 1826 as the date of this photograph, it is nine years earlier than Talbot's first paper negative (1835) showing the lattice window of his library, and eleven years

prior to Daguerre's first successful result, a still life taken in 1837," Gernsheim and Gernsheim write in *The History of Photography*, 59.

3. In fact, he came to it through lithography, with which he also experimented. See Georges Potonniée, *The History of the Discovery of Photography*, trans. Edward Epstean (New York: Arno Press, 1973), 77–81.

4. I draw here on Geoffrey Batchen's very helpful description of these experiments in *Burning with Desire*, 120–121.

5. Batchen provides a different account of this language than I do; see *Burning with Desire*, 69–70. He connects it to eighteenth- and early nineteenth-century landscape painting and the picturesque.

6. della Porta, *Magiae naturalis*, book 17, chapter 6, also quoted in Steadman, *Vermeer's Camera*, 10.

7. Hammond reproduces this diagram in *The Camera Obscura*, 23, as do the Gernsheims in *The History of Photography*, plate 6.

8. Quoted by Potonniée, *The History of the Discovery of Photography*, 82.

9. Ibid., 83.

10. Ibid., 97–99.

11. For a deconstructive reading of these two "points," see Jacques Lacan, *The Four Fundamental Concepts of Psychoanalysis: The Seminar of Jacques Lacan, Book XI*, ed. Jacques-Alain Miller, trans. Alan Sheridan (New York: Norton, 1981), 67–119, and my *The Threshold of the Visible World* (New York: Routledge, 1996), 125–161.

12. Beaumont Newhall, *The History of Photography* (New York: Museum of Modern Art, 1982), 13; Batchen, *Burning with Desire*, 81.

13. Gernsheim and Gernsheim, *The History of Photography*, 57; Potonniée, *The History of the Discovery of Photography*, 97–98.

14. Goethe discovered the afterimage in 1817. "Goethe's theory challenged the Aristotelian truthfulness of optical perception by tethering the act of observation with the body, fusing time and vision," Robert Hirsch writes in *Seizing the Light: A History of Photography* (New York: McGraw-Hill, 2000), 11. For a fuller discussion of the implications of Goethe's discovery for human vision, see Crary, *Techniques of the Observer*.

15. I discuss this concept in chapter 1.

16. Scholars disagree about the date of the heliograph. Potonniée maintains that it was made in 1822 (*The History of the Discovery of Photography*, 97); Newhall says it was made in 1827 (*The History of Photography*, 15), a claim with which Batchen concurs (*Burning with Desire*, 126); and the Gernsheims argue that it could have been made in either 1826 or 1827 (*The History of Photography*, 59).

17. Gernsheim and Gernsheim, *The History of Photography*, 58–62.

18. Potonniée, *The History of the Discovery of Photography*, 97; Gernsheim and Gernsheim, *The History of Photography*, 59.

19. Both Paul Valéry and Daniel Arasse talk about the dynamic nature of Leonardo's analogies. See Valéry, "Introduction to the Method of Leonardo," 25–26; Arasse, *Leonardo da Vinci: The Rhythm of the World*.

20. Quoted in Gernsheim and Gernsheim, *The History of Photography*, 61.

21. Gernsheim and Gernsheim, *The History of Photography*, 62; Helmut Gernsheim

and Alison Gernsheim, *L. J. M. Daguerre: The History of the Diorama and the Daguerreotype* (New York: Dover, 1968), 63–65.

22. Gernsheim and Gernsheim, *L. J. M. Daguerre*, 63, 67; Batchen, *Burning with Desire*, 121.

23. For a detailed account of the steps through which Daguerre established himself as the source of the photographic image, see Gernsheim and Gernsheim, *L. J. M. Daguerre*, 70–109.

24. Daguerre, "Daguerreotype," in *Classic Essays on Photography*, 12.

25. Ibid.

26. Hippolyte Gaucheraud, "Fine Arts. The Daguerotype," *The Literary Gazette; and Journal of the Belles Lettres, Arts, Sciences, Etc.* 1147 (January 12, 1839): 28. From the research archive of Gary W. Ewer, ed., The Daguerreotype: An Archive of Source Material, http://www.daguerreotypearchive.org.

27. Anonymous, "New Discovery in the Fine Arts. The Daguerroscope," *New-Yorker: A Weekley Journal of Literature, Politics, Statistics, and General Information* 7, no. 5 (April 20, 1839): 70–71. From the research archive of Gary W. Ewer, ed., The Daguerreotype: An Archive of Source Material, http://www.daguerreotypearchive.org.

28. Janin, "La Daguerreotype," 436–439.

29. Ibid.

30. Gernsheim and Gernsheim, *The History of Photography*, 66–74; Hirsch, *Seizing the Light*, 12–13.

31. This is an editorial addendum to an essay whose author is unknown: "Chemical and Optical Discovery," *Journal of the American Institute, a Monthly Publication Devoted to the Interests of Agriculture, Commerce, Manufactures, and the Arts* 4, no. 5 (February 1839): 267–277. From the research archive of Gary W. Ewer, ed., The Daguerreotype: An Archive of Source Material, http://www.daguerreotypearchive.org.

32. This is the date that Batchen assigns it (*Burning with Desire*, 136). Newhall says 1838 (*The History of Photography*, 16–17).

33. Batchen, *Burning with Desire*, 133.

34. Robison, "Notes on Daguerre's Photography," 155–157.

35. Gernsheim and Gernsheim, *L. J. M. Daguerre*, 194; Batchen, *Burning with Desire*, 133.

36. Gaucheraud, "Fine Arts—The Daguerotype," 43–44.

37. Anonymous, "Self-Operating Processes of Fine Art: The Daguerreotype," *Spectator: A Weekly Journal of News, Politics, Literature and Science* 553 (February 2, 1839): 114–115. From the research archive of Gary W. Ewer, ed., The Daguerreotype: An Archive of Source Material, http://www.daguerreotypearchive.org.

38. Morse, "The Daguerrotipe," 62.

39. Gaucheraud, "Fine Arts—The Daguerotype," 28.

40. Batchen notes the strange elision in Morse's account of the person who is shining the man's boots, and finds traces of this figure in the first daguerreotype (*Burning with Desire*, 133–136). Nicholas Jenkins proves that this is indeed the case through a microscopic visual analysis, and argues that there may also be two other figures in the photograph ("Traces," *Day by Day: A Blog* [blog], August 22, 2007 http://www.stanford.edu/njenkins/archives/2007/08/traces.html). Both Batchen and Jenkins relate the

shoeshine's semi-invisibility to the lowliness of his social position. Giorgio Agamben sees the daguerreotype as an "image of the Last Judgment" (*Profanations*, trans. Jeff Fort [New York: Zone Books, 2007], 23–27). Since this reading dictates that there be only one person in the daguerreotype, he elides the shoeshine.

41. Henri Bergson, *Creative Evolution*, trans. Arthur Mitchell (New York: Dover, 1998), 302.

42. Gaucheraud, "Fine Arts. The Daguerotype," 28.

43. Robison, "Notes on Daguerre's Photography," 157.

44. Ibid., 155–157.

45. I draw here on Gernsheim and Gernsheim, *The History of Photography*, 75–83; Larry J. Schaaf, *The Photographic Art of William Henry Fox Talbot* (Princeton: Princeton University Press, 2000); Schaaf, *Out of the Shadows*; and Gail Buckland, *Fox Talbot and the Invention of Photography* (Boston: David R. Godine, 1980).

46. This photograph has almost faded away. The one pictured here was made the same year, from the same position, but with a slightly larger camera.

47. Buckland, *Fox Talbot and the Invention of Photography*, 28.

48. Quoted by Malcolm Daniel, Department of Photographs, "William Henry Fox Talbot (1800–1877) and the Invention of Photography," in *Heilbrunn Timeline of Art History* (New York: Metropolitan Museum of Art, October 2004), http://www.metmuseum.org/toah/hd/tlbt/hd_tlbt.htm.

49. Buckland, *Fox Talbot and the Invention of Photography*, 33.

50. William Henry Fox Talbot, "Letter to the Editor," *The Literary Gazette*, no. 1258 (February 19, 1841): 139–140.

51. Brewster, "Photogenic Drawing," 327.

52. This passage accompanies plate 13 in *The Pencil of Nature*. As Russell Roberts notes, it prefigures Walter Benjamin's account of the "optical unconscious" ("Specimens and Marvels: The Work of William Henry Fox Talbot," in *Specimens and Marvels: William Henry Fox Talbot and the Invention of Photography* [New York: Aperture Foundation, 2000], 64–65). Although he has a different understanding of truth, Edgar Allan Poe expresses similar sentiments in his essay on the daguerreotype. He writes that "the Daguerreotyped plate . . . is *infinitely* more accurate in its representation than any painting by human hand," and that "the closest scrutiny of the photogenic drawing discloses only a more absolute truth, a more perfect identity of aspect with the thing represented" ("The Daguerreotype," in *Classic Essays on Photography*, 38). Holmes echoes these claims in the following passage from "The Stereoscope and the Stereograph": "A perfect photograph is absolutely inexhaustible. In a picture you can find nothing which the artist has not seen before you; but in a perfect photograph there will be as many beauties lurking, unobserved, as there are flowers that blush unseen in forests and meadows." Even if we were to look at this image a hundred times with the aid of "the best of our common instruments," Holmes adds, we would not really "know" it, because every time we encounter a photograph, we see something new ("The Stereoscope and the Stereograph," 744).

53. Talbot, "Letter to the Editor," *The Literary Gazette*, 139.

54. This passage accompanies plate 6 in *The Pencil of Nature*.

55. For a detailed account of Talbot's relationship to photographic reproduction, see chapter 4.

56. Joseph Nicéphore Niépce, "Memoir on Heliography," published in Gernsheim and Gernsheim, *L. J. M. Daguerre*, 67.

57. "The memoir dated 'Kew, le 8 Décembre, 1827' was accompanied by several heliographs," Gernsheim writes; "these, with the exception of this photograph from nature, were reproductions of engravings. The specimens were all referred to him together with the memoir, for the Royal Society felt unable to take cognizance of an invention, the details of which the inventor was unwilling to disclose"; Gernsheim and Gernsheim, "Rediscovery of the World's First Photograph," 1.

58. Helmut Gernsheim, "The 150th Anniversary of Photography," *History of Photography* 1, no. 1 (1977): 6–7.

59. Gernsheim offers the most detailed account of this discovery in "The 150th Anniversary of Photography."

60. Ibid., 7.

61. Ibid., 8.

62. Gernsheim and Gernsheim, *The History of Photography*, 59.

63. I am quoting here from the Harry Ransom Center website, "Conservation: The First Photograph" (Austin: The University of Texas at Austin, 2003–present), http://www.hrc.utexas.edu/exhibitions/permanent/firstphotograph/conservation/#top.

64. This is how Batchen characterizes the over-painted photograph (*Burning with Desire*, 127).

65. Gernsheim, "The 150th Anniversary of Photography," 8.

66. Ibid., 8.

67. Barbara Brown, "The First Photograph," *Abbey Newsletter* 26, no. 3 (November 2002). Brown is the head of photograph conservation at the Harry Ransom Humanities Research Center, and participated in the Getty Conservation Institute's analysis of the photograph.

68. The Getty Conservation Institute, "Scientific Analysis of World's First Photograph," J. Paul Getty Trust, 2002, www.getty.edu/conservation/publications_resources/newsletters/17_2/gcinews1.html.

69. Eduardo Cadava and Gabriela Nouzeilles included an exhibition copy of this work in an excellent photography exhibition at the Princeton University Art Museum in the fall of 2013, "The Itinerant Languages of Photography." Cadava also discusses it in the exhibition catalogue. Both the exhibition and the catalogue were devoted to the premise that photographs cannot be "fixed in a single time and place," because they "travel from one forum to another," and because "with each recontextualization and rereading, they redefine themselves and take on different and expanding significances." See Cadava and Nouzeilles, introduction to *The Itinerant Languages of Photography*, ed. Cadava and Nouzeilles (Princeton: Princeton University Art Museum, 2013), 17. In the first essay in the catalogue, Cadava writes that "although Fontcuberta stresses the intensification of this circulation and itinerancy today in the era of digitization, he also suggests [through *Googlegram: Niépce*] that this movement has always formed part of the photographic image" (30). Needless to say, I concur strongly with both of these claims.

70. For the sake of clarity, I have described the Google search and the photomosaic program separately, but the two operations happened simultaneously. In fact, Fontcuberta ran the Google search *through* the photomosaic program.