

# THE SPECTRALITIES READER

## GHOSTS AND HAUNTING IN CONTEMPORARY CULTURAL THEORY

EDITED BY

MARÍA DEL PILAR BLANCO

AND ESTHER PEEREN

B L O O M S B U R Y

- 20 On the spectrality of sound, see also Kevin J. Donnelly, *The Spectre of Sound: Music in Film and Television* (London: BFI, 2005).
- 21 Allen S. Weiss, *Phantasmic Radio* (Durham, NC: Duke University Press, 1995), 7.
- 22 David Toop, *Sinister Resonance: The Mediumship of the Listener* (New York: Continuum, 2011), vii.
- 23 *Ibid.*, 130.
- 24 Sconce, *Haunted Media*, 209.

## 13

## To Scan a Ghost: The Ontology of Mediated Vision

*Tom Gunning*

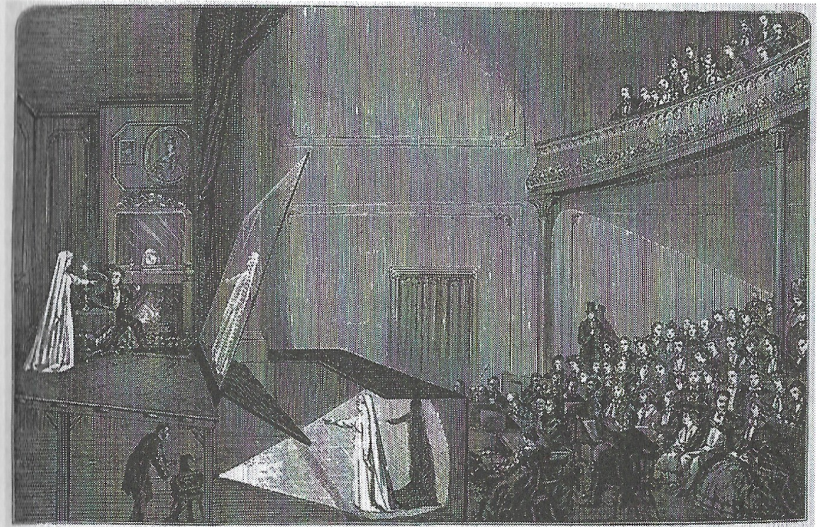


Figure 1 The Pepper's Ghost Illusion of 1862 created the impression of a transparent phantom by means of a reflection on a pane of glass.

### 1. Rendering the invisible world visible

*Though in many of its aspects this visible world seems formed in love, the invisible spheres were formed in fright.*

—Herman Melville, *Moby Dick* (1851)

Friedrich W. Murnau's 1922 "Symphony of Horror" *Nosferatu* cuts directly from a swarm of plague-bearing rats (one of which has just bitten a sailor on the foot) emerging from the hold of a ship in which the vampire lies in his coffin filled with earth, to Prof. Bulwer, "a Paracelsian," in a lecture room laboratory initiating his students into the night-side of Nature. Murnau intercuts Bulwer's lecture with shots a film historian (and likely a contemporary viewer) would recognize as taken from (or closely patterned on) the scientific films of the era, including a close-up of a Venus flytrap closing around its prey and a spider crawling along its web toward a trapped insect. Murnau uses complex and highly symbolic intercutting in this scene and throughout the film, less to arouse Griffithian suspense than to create a series of magically interlocking events carried by sinister correspondences and analogies.<sup>1</sup> Thus, although the cut to the spider web confirms Bulwer's demonstration to his students of the pervasive cruelty of nature, its vampire-like system of feeding on other species, this spider web does not cling to some untidy corner of Bulwer's lecture room. Rather, through editing's ability to juxtapose different spaces, this web hangs in the asylum cell of the vampire's minion, Knock, whom we have just seen devour insects, proclaiming, "Blood is life!" Just as Bulwer compares the carnivorous plant to the vampire, Murnau's editing compares the madman and the scientist, each the center of a dark system of deadly metaphors and hysterical imitations. Murnau cuts back from the asylum cell to Bulwer and his students bent over a water tank, as the scientist isolates another vampire of the natural world. A "polyp with tentacles" appears not merely enlarged by a close-up but obviously filmed through micro-cinematography, a frequent technique of scientific films since the invention of cinema.<sup>2</sup> As the microscopic monster's tentacles grasp another cellular creature and seem to devour it, this glimpse into an invisible world made possible by the conjunction of two emblematic modern optical devices (the microscope and the movie camera) still compels our wonder. In an intertitle Bulwer describes the creature: "transparent, almost ethereal . . . but a phantom almost." (Indeed one can see, in this silent film, the actor's lips form the word *phantom*, evoking another phantom presence in silent cinema, the voice—eluded to, visualized, even translated into intertitles—but never heard directly<sup>3</sup>).

Murnau's intercutting gives Bulwer's analogies and metaphors a natural, if not a supernatural, demonstration. Cinema visualizes nature's sinister powers through the intercutting of predators across the various locales of the story (dockside, madman's cell, scientific lecture hall). The sequence also demonstrates the uncanny powers of the cinema. By supplying literal and disturbing images of nature's vampiric appetite through close-ups taken from (or closely imitating) scientific films, Murnau not only roots his horror tale in the seemingly objective world but aligns the medium of cinema with other optical devices of observation and display, such as the microscope. If

we take this conjunction of the scientific and the supernatural merely as a motif of the horror genre, we miss Murnau's reference to German Romantic *Naturphilosophie*. Bulwer represents more than a horror film mad scientist, exceeding even the Victorian-era biologist Van Helsing from Bram Stoker's *Dracula* who provided the source for the film's scientist character in this free adaptation.<sup>4</sup> Murnau and his scriptwriter (the shadowy Henrik Galeen) backdated Stoker's tale from the end to the early nineteenth century, transforming Van Helsing into a Romantic scientist modeled on figures such as J.W. Ritter, Lorenz Oken, and Alexander von Humboldt.

These pioneers of Romantic life sciences took as their principle the unity of nature and the existence of archetypal forms (like Goethe's *Urpflanze*) throughout nature, uniting the vegetable and animal world (and even the organic and inorganic) in similar dynamic processes of growth, transformation, and decay. As Ritter put it, "Where then is the difference between the parts of an animal, of a plant, of a metal, and of a stone—Are they not all members of the *cosmic-animal*, of *Nature*?"<sup>5</sup> Describing plants as composing "the language of nature,"<sup>6</sup> Ritter, like most Romantic scientists influenced by the *Naturphilosophie* of Schelling, conceived of Nature not as inert material but as an organic entity shot through and enlivened by a system of correspondences and metaphors. By the end of the nineteenth century, however, the logic of such correspondences had been excluded from serious consideration by a positivist and empiricist current in science that had critiqued and replaced the Romantics. But in 1922 Murnau used editing to visualize such metaphors, reviving, through modern technology, an untimely system of thought. For Murnau the medium of cinema appears to demonstrate a system that science no longer endorsed.

In *Nosferatu* Murnau provided world cinema with one of the first masterpieces that systematically reflected on the artistic possibilities of the new medium of cinema. Far be it from me to underestimate the achievement of cinema during its previous two and a half decades (the works of Lumière, Méliès, Bauer, Griffith, and many others). Whereas Griffith aspired (rather disingenuously) to an appearance of transparency in his emulation of historical epic narrative in *The Birth of a Nation* and *Intolerance*,<sup>7</sup> Murnau synthesized the pictorial heritage of the cinema of the 1910s (Tourneur, Bauer, Hofer)<sup>8</sup> with Griffithian strategies of crosscutting, transforming both traditions in the process. *Nosferatu* explored the play between the visible and the invisible, reflections and shadow, on- and off-screen space that cinema made possible, forging a technological image of the uncanny. One senses throughout *Nosferatu* this excitement of innovation, of redefining a medium by testing and transforming its relation to its own history and to other media (the strong use Murnau makes of painting, literary texts, scientific discourse, and even musical rhythms). As such the film offers lessons not only in the nature of cinema as a visual medium but also in the question

Aus diesen Tagen  
zeichne ich auf, daß Profes-  
sor Bulwer seinen Schü-  
lern die grausame Art der  
fleischfressenden Pflanzen  
erklärte. Mit Grauen  
sah man in das geheim-  
nisvolle Wesen der Natur.



Figure 2 *Nosferatu: A Symphony of Horror*. Dir. F.W. Murnau, 1922. Stills. Professor Bulwer, a Paracelsian, explores the vampires of the microscopic world.

of what a “new medium” can create by reflecting upon itself and its differences from and similarities to other media.

Not the least of my discomforts with the current term *new media* comes from the linear succession it inflicts on our still emerging understanding of media history—as if the prime modernist virtue of renewal followed automatically from technical innovation and commercial novelty. I want in this essay to explode the iron cage of historical succession to which this use of the term *new* unwittingly commits us. In its place, I want to celebrate the impact of untimely discovery (which often involves a recycling of the supposed “outmoded”) that frequently motivates artistic renewal. But if the term *new* in “new media” seems to be easily critiqued, what about the term *media*? Too often the accent is placed exclusively on the first term with the assumption that the second goes without saying, a transparent channel of transmission, a technological conduit for communication. If the novelty of media is to be granted a purchase in aesthetic analysis, its historical lineage needs explication. What is it that mediates between the seen and the seer—what pathways do vision and the other senses take?—rather than being the mere vehicles of transmitting messages and meaning? As I want to explore and question in this essay the trope of vision and transparency, I also want to focus on the term *medium* itself, in all its polysemy and historical divagations, its very materiality and its paradoxical aspiration to immateriality.

This essay reflects on the occasionally untimely and potentially uncanny nature of modern media, visual and auditory, through a consideration of a pre-modern conceptualization of visual perception and the imagination in Western thought, guided by philosopher Giorgio Agamben’s discussion of the “phantasm,” and more literally by the untimely figure of the ghost or phantom, especially in visual form.<sup>9</sup> A “phantasm” denotes an image that wavers between the material and immaterial and was used by premodern philosophy and science to explain the workings of both sight and consciousness, especially the imagination (*phantasia*). Although a discredited and untimely concept in both philosophy and science, the phantasm provides a tool for thinking through modern—including “new”—media. I believe that in the new media environment based in the proliferation of virtual images, the concept of the phantasm gains a new valency as an element of the cultural imaginary. The ghost has emerged as a powerful metaphor in recent literary studies, cultural history, and even political theory. An examination of their history of representation, including the newly emerging visual devices can sharpen and renew these metaphors.

The polyp vampire projected by Murnau’s microscopic cinema embodies a mediated, phantasmatic imagery whose visual appearance wavers ambiguously between the visible and the invisible. Bulwer’s emphasis on the transparency of the predator polyp floating on the screen so highly magnified, its body almost as translucent as the water that bears it, offers

not only a literal image of a phantasmatic body (visible, yet seen through); it also recalls for us the transparent nature of film itself, its status as a filter of light, a caster of shadows, a weaver of phantoms. "Transparent, almost a phantom." The act of seeing encounters a bizarre entity whose quasi-ethereal nature marks the limit (or contradiction) of visibility. By displaying the most primitive form of cellular life through the most modern of media, Murnau employs an untimely anachronism, suggesting the anticipation of cinema in this early-nineteenth-century lecture hall. Bulwer and his students are not shown peering into microscopes to see this creature. Instead, the image looms before us, oddly abstracted from any specified means of seeing it, a product of cinema not wholly absorbed back into the film's diegesis, a self-reflective moment that seems to float, in more ways than one, upon the movie screen. Bulwer's demonstration not only makes the drama of microscopic vampirism visible but also makes the medium of its presentation (whether thought of as microscope or cinema) seem to disappear, as the medium becomes transparent in the wake of its message. This elegant demonstration not only visualizes a gaze of scientific mastery but also explores an uncanny dialectic of the visible and the invisible introduced by technologically mediated images.

Bulwer's lesson, despite using scientific footage, occurs in a fictional film, but the attempt to establish an occult invisible world of phantoms through the modern devices of photography has historical foundation. The recent exhibition of spirit photography (originating in La Maison Européenne de la Photographie in Paris, then brought to the Metropolitan Museum of Art in New York City in September of 2005) focused unprecedented attention on nineteenth-century photographic images that were offered as evidence of the existence of spirits or ghosts.<sup>10</sup> While many reviewers treated this exhibition as a joke, it confronted alert viewers with more than a risible encounter with discredited beliefs or even an eccentric episode of photographic history. If these images continue to fascinate us, this may come less from what they indicate about a belief in ghosts than what they reveal of our beliefs about photographs. Rather than focusing on the claims made for such photographs as proof of the existence of a spirit world, I want to explore their formal, visual nature—what supposed photographs of ghosts or spirits *look like*—and their phenomenological aspect—how these images *affect us* as viewers. The convergence between phantoms and photography may prove more than fortuitous. In discussing these Spirit Photographs, the term *phantasmatic* denotes images that oscillate between visibility and invisibility, presence and absence, materiality and immateriality, often using transparency or some other manipulation of visual appearance to express this paradoxical ontological status. Beyond the literal sense of survival after death, ghosts, as phantasms revealing hidden assumptions about the nature of the visual image, still haunt our modern media landscape.

Ghosts or spirits appear in Spirit Photographs primarily as phantoms—bodies rendered optically strange, semitransparent or out of focus, dissolving into shrouds of gauze or simply incongruously "floating" in the space of the photograph. This iconography of phantoms not only draws on a widespread tradition in portraying the ghostly but mimes a visual experience that exceeds or contradicts normal conditions of sight and recognition. Most Spirit Photographs portray spirits alongside "normal" figures in familiar spaces (posed subjects in a studio or room), but the two sorts of bodies appear oddly superimposed upon each other or illogically juxtaposed. This collision of separate orientations betrays the technical means by which the photographs were produced (super-imposing two or more images photographed at separate times) and therefore undermines their claim to be evidence of a spirit world. Nonetheless, their incongruous juxtaposition yields an eerie image of the encounter of two ontologically separate worlds. Like the free-floating polyp of Bulwer's demonstration, Spirit Photographs portray a fissured space, one that allows visitors from another dimension to peek through, hovering within (or beyond), the space occupied by the "normal" figures.

Even if we did not take these unconventional images as rendering actual spirits, a clash of different representations of bodies confronts us (at least on a formal level), the one familiarly solid and positioned, the other somehow filtered by the process of transmission into a virtual body, weightless or permeable—a phantom. Spirit Photography juxtaposes physical presence with its contrary, a phantom-like transformation of the human body that does not remove it from our vision but does render it somehow unreal. Instead of simply being present, the phantom occupies the ontologically ambiguous status of "haunting"—enduring and troubling in its uncanny claim on our awareness and sense of presence yet also unfamiliar and difficult to integrate into everyday space and time. Such phantasms, with their haunting blend of presence/absence, not only formed the subject of Spirit Photography but cast a continued, if occluded, influence over our experience of mediated visual images and photographs in a contemporary culture increasingly dedicated to the virtual.

More than a decade ago I wrote a pioneering essay on Spirit Photography, whose research is now far surpassed by more recent work such as the essays included in the catalog for the Metropolitan Museum exhibition.<sup>11</sup> But the theoretical issues I raised in that earlier essay (and several other related essays dealing with the emergence of modern media recording both sound and images in the nineteenth century) remain crucial.<sup>12</sup> The modern media environment, the proliferation of virtual images and sounds that ever increasingly surround us, recalls earlier models of the relation between consciousness and the cosmos that drew on magical or supernatural analogies.<sup>13</sup> I am far from proposing here a project of reenchantment of technology. Rather I want to probe the unique cultural nature of modern

media, which confront us with representations that are fundamentally different from conventional realist theories of mimesis based simply in resemblance. However, rather than offering yet another review of the ontology of the photographic image as proposed by André Bazin, Roland Barthes, and others, I want to explore the ontology and phenomenology of modern media of reproduction (the debates surrounding photography can be extended to both moving image and sound recording) through the metaphor of the ghostly and the phantasm. The ontological argument claims that photography not only portrays things but participates in, shares, or appropriates the very ontology of the things it portrays. In what way does the medium disappear in photography, abdicating in favor of the object portrayed? How does the photographic medium mediate? Spirit Photography opens one way of raising this question, with its ghostly conception of the medium as message.

## 2. Ghostly vision/ghostly images: Mediums and media

*There would be as great an inconvenience in seeing spirits always with us, as in seeing the air that surrounds us, or the myriads of microscopic animals that flutter around us and on us.*

—Allan Kardec, *The Book on Mediums* (1878)

Described in an intertitle as a “Paracelsian,” Bulwer not only recalls the early-nineteenth-century Romantic scientist but also represents the heritage of “natural magic,” an ancestor of experimental science, whose major authors, from Giambattista della Porta and Athanasius Kircher through to David Brewster, dealt with the wonders of nature more than its regularities and explored especially its visual illusions.<sup>14</sup> Scientific and occult beliefs, as well as a fascination with devices of wonder, mixed promiscuously in sixteenth- and seventeenth-century natural magic, creating a tangle that later scientists and philosophers tried hard to sort out. The optical effect of lenses, including microscopes and telescopes, even as they revealed new worlds of the infinitesimal or the seemingly infinitely distant, often got caught in this thicket.<sup>15</sup> Controversies and skepticism initially met images mediated by new optical devices, partly because the effects of mirrors and lenses were primarily associated with the catoptric illusions managed by conjurers and charlatans.<sup>16</sup> Natural magic remained associated with the world of illusions and entertainments, the display of curiosities and extraordinary devices, staging spectacular demonstrations of electricity, magnetism, and optical phenomenon, but often yoked to scientifically dubious explanatory systems.<sup>17</sup> Although accounts of the evolution of scientific thought and

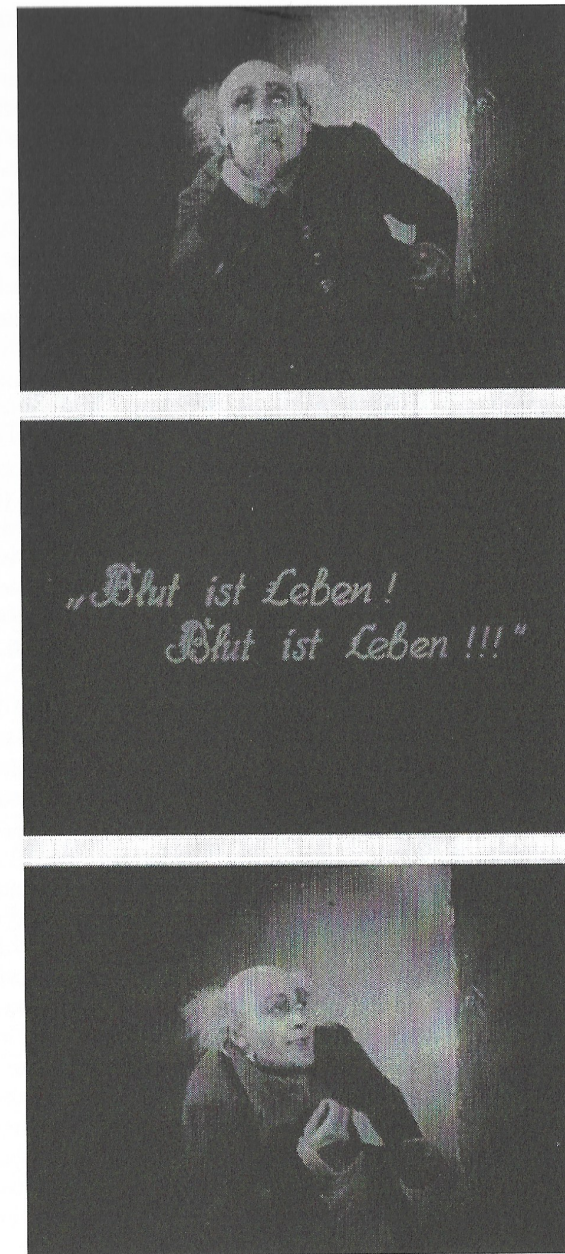


Figure 3 *Nosferatu: A Symphony of Horror*. Dir. F.W. Murnau, 1922. Stills. The vampire's minion Krock eats flies, crying “Blood is life.”

experiment privilege the dominant current of Enlightenment mechanistic investigation and explanation, the heritage of natural magic follows scientific thought and practice for centuries like a shadow. The Romantic scientists of the early nineteenth century wished to reform scientific thought by returning it to its roots in the correspondences and metaphors that made up the magical system of Paracelsus, the Renaissance occultist scientist and doctor, but they also endeavored to enrich this esoteric tradition through scientific observation, including employing new visual devices, as well as integrating new conceptions of electricity, magnetism, and the nature of life.<sup>18</sup>

Nineteenth-century American Spiritualism, a loose-knit ideology based on communication with spirits of the dead, primarily through “mediums” who conveyed messages while in a trance, in many ways continued this Romantic tradition.<sup>19</sup> Spiritualists embraced recent scientific devices, such as telegraphy and photography, both as tools for conveying or demonstrating their ideas and as central metaphors for their communication with the spirit world. In an ideology in which “mediumship” played the central role, a fascination with “new” media abounded, allowing a convergence of modern media of communication with occult systems.<sup>20</sup> As Jeffrey Sconce observes in his study *Haunted Media*, discussing the simultaneous development in the mid-nineteenth century of technological messages sent by telegraphy and supernatural messages conveyed by trance mediums, “the historical proximity and intertwined legacies of these founding ‘mediums,’ one material and the other spiritual, is hardly a coincidence.”<sup>21</sup> Romantic *Naturphilosophie* and, in a more popular form, Spiritualism, each sought the dialectical reenchantment of science as well as the scientific foundation of supposed supernatural phenomenon. This quest to rediscover ancient knowledge and revelations implicit in new scientific discoveries encapsulates the untimeliness peculiar to the modern occult—torn between archaic and progressive energies. Bulwer’s brief microscopic film, besides scientifically demonstrating the pervasive influence of the vampire throughout nature, also shows what the night side of nature looks like—displaying a devouring phantom, ethereal yet material, visible yet transparent. This convergence of modern media and the spirit world revolves, at least in its visual manifestation, around a phantasmatic body—visible yet insubstantial, an image, separated from its physical basis or somehow strangely rarified, become transparent—a phantom, almost.

What does a ghost look like? A ghost puts the nature of the human senses, vision especially, in crisis. A ghost, a spirit, or a phantom is something that is sensed without being seen. But this does not necessarily mean that ghosts are more easily heard, smelled, or felt (the sense of taste and ghosts seem to have rarely been paired, although orality plays a recurrent role in Spiritualism, as in the extrusion of ectoplasm from the mouths—and other orifices—of mediums). Ghostly presences may be betrayed by each

of these senses, but the confluence of the senses that we think of as making up an ordinary reliable perception of reality seems somehow disaggregated in the case of ghosts. In fact, when encountering a ghost, the senses may contradict themselves rather than cohere. One of the earliest testimonies of an encounter with a ghost, given by Emperor Charles IV in the fourteenth century, describes the night the emperor and a companion endured in his castle in Prague during which they repeatedly heard the sound of a man walking and saw a chalice thrown across the room, but no specter ever became visible.<sup>22</sup> Likewise, ghosts frequently appear substantial but allow other bodies and objects to pass through them without resistance. The senses do not converge on ghosts: they can be heard without being seen, smelled without being touched, seen without registering a tactile presence, and so on. Further, the presence of a ghost is often sensed without generating a normal sensual experience. The ghost is there but is not really heard, smelled, felt, or seen.

The essential aspect of a ghost, its terrifying presence, comes from this uncertainty, this problematic relation to the senses and therefore to our sense of the world. One can, of course, discuss this uncertainty in terms of the ontology of the phantom itself, its mode of existence ambiguously perched between the living and the dead, the material and the incorporeal, rather than its mode of being perceived. From St. Augustine at the beginning of the Middle Ages, through the Protestant Reformation, to the polemics of orthodox Christians against the Spiritualists in the nineteenth century, the nature and even the possibility of ghosts have been hotly debated by theologians.<sup>23</sup> The uncertainty sowed by a ghost, then, would be metaphysical rather than phenomenological. But my focus precisely targets the phenomenological, how ghosts present themselves to the living, their mode of apprehension if not perception. The mode of appearing becomes crucial with ghosts and spirits because they are generally understood, by both believers and skeptics, to be apparitions rather than ordinary material objects. What does it mean for a ghost to be an appearance, to be an image? In the late nineteenth century, when people looked at Spirit Photographs, beyond the essential question of individual recognition—how did they know it was the late Uncle Harry?—lay a more basic question: How did they know it was a ghost? What does a ghost look like?

According to the admirable study by Jean-Claude Schmitt, the earliest attempts to give a visual representation of ghosts, illustrations included in medieval manuscripts, usually miniatures worked into the text itself, portrayed ghosts no differently than living people. Thus even ghosts in tales describing them as invisible were portrayed with conventional bodies (as in the illustration included in manuscripts of Charles IV’s account of the Prague ghost). Sometimes their ghostly nature was indicated by macabre details, the wearing of a shroud, evidence of bodily decay, or outright portrayal as a cadaver. Toward the end of the thirteenth century ghosts

first appear portrayed as phantoms. Schmitt describes an example from a Spanish manuscript: “he is lacking all color and material density; the description of his face and his clothing is reduced to a drawing that is uniformly diaphanous and scarcely visible.”<sup>24</sup> As Schmitt puts it, this image “announces from afar those that, since the nineteenth century, have been imposed on us to the exclusion of all others.”<sup>25</sup>

My interest in this question goes beyond the iconography of the ghostly; it circles back on the ghost as paradoxical figure of vision, the shadowy ontological status of the ghost as a virtual image, a visual experience that somehow differs from common perception and whose means of representation seek to convey that ontological waver. To fully explore this, I want to probe traditional understandings of visual perception and the role images play in the process as mediation between objects and human perception, a tradition gradually attenuated in the modern era of optics yet strangely re-emerged in the phenomena of photography and Spiritualism. In theories of human vision, the ghostly and the phantasmatic play a complex role, as sight has often been conceived as quasi-spiritual, somehow ethereal, as if the process of vision itself were almost phantom-like.

### 3. The ghostly medium of vision: The phantasm

*These visible things come inside the eye—I do not say the things themselves, but their forms—through the diaphanous medium, not in reality but intentionally, almost as if through transparent glass.*

—Dante Alighieri, *Convivio* III.9

Before Kepler and the rise of modern optics explained vision as a relation between light and lenses—that is, media that carried and shaped light, whether a lens precisely ground, a glass of water, or the human eye—the medium by which sight occurred was understood as consisting of images, *phantasmata*, that in effect worked as relays between objects seen and human vision. According to Aristotle, both perception and thinking rely on *phantasia* (usually translated as “images” or “imagination”), “for when the mind is actively aware of anything it is necessarily aware of it along with an image: for images are like sensuous contents except in that they contain no matter,”<sup>26</sup> adding, “the name *phantasia* (imagination) has been developed from *phaos* (light) because it is not possible to see without light.”<sup>27</sup> In its sensual yet immaterial nature *phantasia* works through the virtual image, *phantasm*. The Stoics and Epicureans, while holding that these images possessed a more physical nature than Aristotle claimed (by which means they were able to impress their form on the soul in perception and

thought) and disagreeing among themselves about their exact processes, still maintained the existence of such an imagistic intermediary.<sup>28</sup>

The premodern worldview, especially after the triumph of a Platonically tinged Christianity, constructed hierarchies and chains of being in which reality relied on a communication across gradations of distance from the divine. Across such distances intermediaries played essential roles. Thus St. Augustine described vision as threefold, corresponding to the triple nature of human being: intellectual vision (reason), physical vision (body), and spiritual vision (the soul). Human beings saw the physical world through corporeal vision, *sensus*, and recognized abstract ideas through intellectual vision, *mens*, which in its contemplation of God went beyond any image. But between these extremes, spiritual vision constituted a hybrid process, the realm of imagination; it experienced the images of things, but separate from their bodily being. Imagination included memory as well as fantasy and the realm of dreams. But all three realms of sight depended on intermediaries, whether the abstract ideas used by the intellectual vision, or the images that carried the imagination.<sup>29</sup> As Jean-Claude Schmitt summarizes this tradition in the Middle Ages, even physical sight involved the “concrete, physical interaction of the eye and the object through an external medium: *species* circulated and penetrated into the eye.”<sup>30</sup>

This conception of sight pictured the eye’s ability to form an image less as an optical process, as currently understood, than as a more material process as the human perceptive faculty became imprinted by an intermediary, the *phantasm* or *species* that already bore the nature of an image. While Greek authorities, followed by their Arabic translators and commentators, supplied numerous variations and modifications on this scheme, the extreme description provided by the Epicurean and atomist philosopher Lucretius remained both influential and typical.<sup>31</sup> Vision, Lucretius claimed, was carried by images (*simulacra*), which he described quite materially as *films*, “a sort of outer skin perpetually peeled off the surface of objects and flying about this way and through the air.”<sup>32</sup> He explained their effect on human vision as one of direct contact: “while the individual films that strike upon the eye are invisible, the objects from which they emanate are perceived.”<sup>33</sup> As David Lindberg summarizes this tradition, “films or *simulacra* . . . communicate the shape and colour of the object to the soul of the observer; encountering the *simulacrum* of an object is, as far as the soul is concerned, equivalent to encountering the object itself.”<sup>34</sup> Roger Bacon’s thirteenth-century synthesis of theories of vision, aligned with an Aristotelian understanding of vision as involving a transformation of the medium of air (rather than the atomists’ assumption of actual material, albeit rarefied, “films” that separated from visible objects), nonetheless depended upon intermediaries that ferried the image from object to observer moving through the medium of the air, explaining, “and this power is called ‘likeness,’ ‘image’ and ‘species.’”<sup>35</sup>

Virtual skin



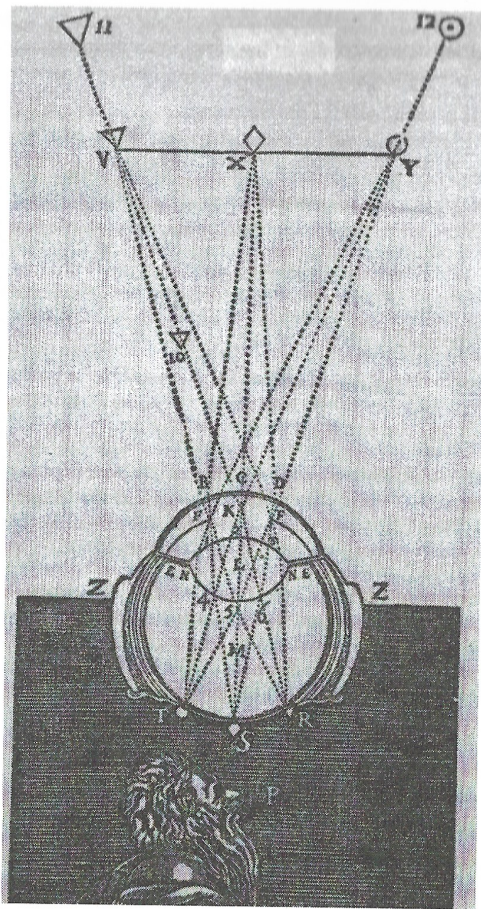


Figure 4 René Descartes. *Dioptrics*, 1637. Diagram of the retinal image.

To a modern eye, this explanation of the phenomenon of vision seems not only unduly complex and redundant but oddly ghostly. Lucretius's description of a universe in which "objects in general must correspondingly send off a great many images in a great many ways from every surface and in all directions simultaneously"<sup>36</sup> evokes a world thick with ghosts, a hall of reflecting mirrors (or perhaps a contemporary airport lounge stocked with successive monitors all broadcasting CNN). Among the terms that Bacon listed as synonyms for his *species*—*lumen*, *idolum*, *phantasma*, *simulacrum*, *forma*, *similitudo*, *umbra*<sup>37</sup>—are terms used then and now for ghosts. Indeed, before the nineteenth century the world of imagination and images, *phantasia* and *phantasmata*, constituted the medium not only of

vision but also of psychology generally, as images were the means by which objects penetrated consciousness, dreams occurred, artists created works, lovers became obsessed, magical influences were conveyed, memories were preserved—and ghosts appeared. The Renaissance system of magical influence depended, as Jaon Couliano showed, on the manipulation and control of phantasms, powerful intermediaries that human action could direct, intensify, and control.<sup>38</sup> Giorgio Agamben describes this system of *phantasma* as "a kind of subtle body of the soul that, situated at the extreme point of the sensitive soul, receives the images of objects, forms the phantasms of dreams, and, in determinate circumstances, can separate itself from the body and establish supernatural contacts and visions."<sup>39</sup> Of course, different philosophical schools elaborated distinctions among these processes and debated various theories of their nature, but until relatively recently phantasms or similar intermediaries constituted a realm of images that determined contact between human beings and the world. Within such a worldview, filled with mobile insubstantial images, an atmosphere of virtuality, the experience of seeing ghosts seems almost natural, rather than supernatural.

Kepler's explication of vision as the interaction between light, the eye, and the retinal image can be considered to be as revolutionary as the almost simultaneous displacement of the earth-centered theory of the universe that he and Copernicus theorized.<sup>40</sup> Compared to Kepler's schema of vision, the unnecessary duplication created by the model of free-floating images posed a barrier to a true scientific understanding of perception.<sup>41</sup> This new optical understanding of the process of vision rendered the category of phantasms unnecessary for the understanding of vision and therefore made the medium that joined the mental and the physical (and by which ghosts were also experienced) no longer a necessary part of the explanation of ordinary experience. In the premodern system, insubstantial ghosts had shared the ontology of the phantasms that conveyed emotion, dreams, and artistic imagination. But in the modern era in which vision directly communicated with the world through the optical operation of the eye, ghosts' lack of clearly defined sensual properties placed them beyond the categories of scientific observation or consideration.

#### 4. The apparatus of vision: Optical illusions and optical devices

*Is it hard for you to accept such a mechanical and artificial system for the reproduction of life? It might help if you bear in mind that what changes the sleight-of-hand artist's movements into magic is our inability to see!*

—Adolfo Bioy Casares, *The Invention of Morel* (1940)