Art in the First Screen Age: László Moholy-Nagy and the Affordances of Surfaces, Canvases, and Scrims

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An Ideal Screen and a Screen with a Memory

The current screen age unfolds beneath the banner of convergence: diverse media and art converge in digital code and are displayed interchangeably on universal devices and screens.[1] A century ago, the first screen age advanced under the sign of dispersion: screens dispersed into nearly every conceivable form of art. Buildings dematerialized into illuminated surfaces; abstract films and cameraless photographs filled avant-garde cinemas and journals; scrims populated stages; multimedia installations suffused trade shows and museum galleries; and, as we will see, modernist canvases (*Fläche*), commercial movie screens (*Filmleinwand*), and phantasmagoric scrims (*Schirm*) waged battle over material and symbolic supremacy. No one grasped the potentials and

1. The scholarship on screens has ballooned in recent years. See esp. Casetti, "Optical and the Environmental"; Saether and Bull, *Screen Space Reconfigured*; Casetti, "Countergenealogy of the Movie Screen"; Buckley, Campe, and Casetti, *Screen Genealogies*; Rogers, *On the Screen*; Chateau and Moure, *Screens*; and Göttel, *Die Leinwand*. The term *convergence culture* was popularized in Jenkins, *Convergence Culture*.

limitations of the first screen age more acutely than the avant-garde polymath and Bauhaus master László Moholy-Nagy.

Although never recognized as such, screens are the center of gravity around which Moholy-Nagy's myriad and multifarious output revolves. The lack of recognition enshrouded as well his radical interpretation of the canvas cum screen. In Moholy-Nagy's Bauhaus summa *From Material to Architecture* (1929)—soon translated and renowned as *The New Vision*—the former Bauhaus master rewrote the history of modern art as a teleological progression from material canvases to immaterial screens. His vehicle was none other than Kazimir Malevich's *Suprematist Composition: White on White* (1918), a nearly monochrome oil painting whose subtle variations in white, bravura handling of paint, and oblique slanted square atop a square canvas pointed the way toward infinite spiritual freedom (fig. 1). Part reductio ad absurdum, part theosophic declaration, *White on White* exemplified and exceeded the tidy rules then hardening around modernist painting. In Maurice Denis's famous formulation from 1890: "A painting [*tableau*]—before being a warhorse, a naked woman or some story or other—is essentially a flat surface [*surface plane*] covered with colors assembled in a certain order."[2] Moholy-Nagy appeared uninterested in any of these modernist bailiwicks. Instead, his stated goal was the complete sublimation of pigment to light and with it the ultimate simplification of the picture, the projection screen: "Here is to be found the interpretation of Malevich's last [*sic*] picture—the flat white surface [*plane weiße fläche*]. One cannot deny that this constituted the ideal screen [*ideale schirm*] for the light and shadow effects which, originating in the surroundings, would fall upon it. The same thing is effected as by the manual image's big brother: the film screen [*Filmleinwand*]."[3]

For Moholy-Nagy, diction was destiny. Through a subtle yet telling choice of words, echoed and amplified throughout his writings at the time, Moholy-Nagy established a tripartite division between the modernist flat surface (*plane*

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2. Denis, "Definition of Neotraditionism," 863.

3. Moholy-Nagy, *von material zu architektur*, 90. Translation adapted from Moholy-Nagy, *the new vision*, 77–78. Lack of capitalization in the original. Moholy-Nagy's interpretation remains largely repressed in the literature on Malevich. Note its curious absence, for example, in the otherwise thorough and thoughtful analyses in Tupitsyn, *Malevich and Film*; Bulgakowa, "Malevich in the Movies"; and Shatskikh, "Malevich and Film." Traditional readings of modernist painting tend to oppose Moholy-Nagy's interpretation (implicitly) at every turn. See, e.g., Clark, "God Is Not Cast Down," 268–71. Given that Malevich's protosuprematist sets were designed for the projection of colored lights, Moholy-Nagy's interpretation gains a level of historical acuity he could not have intended. See Lodder, "Kazimir Malevich and the Designs for *Victory over the Sun*." For a notable exception to these silences, see Joseph, "White on White," 97n22. The literature on Moholy-Nagy is vast. In addition to the references cited below, see esp. Botar, *Sensing the Future*.
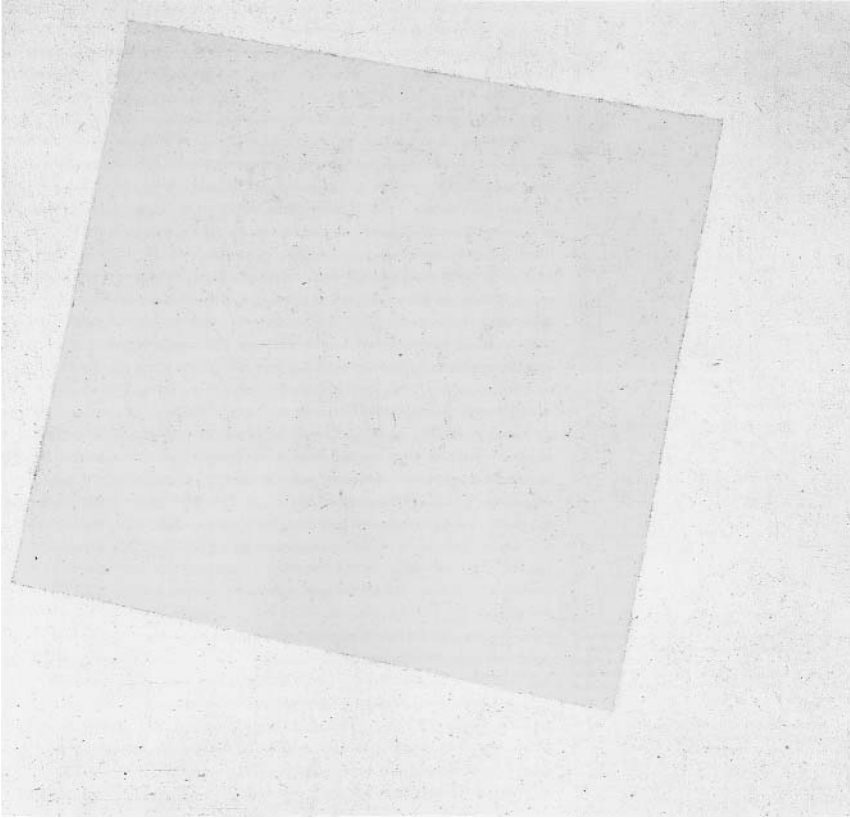
Figure 1. Kazimir Malevich, *Suprematist Composition: White on White* (1918). Oil on canvas, 31.25 × 31.25 in (79.4 × 79.4 cm). Museum of Modern Art, New York.

Fläche) advanced by Denis, the industrial screen that dominated commercial cinema (*Filmleinwand*), and the ideal screen he called a *Schirm*. This tripartite division is immediately reminiscent of what I have elsewhere theorized as three distinct screen *dispositifs*: domestic, cinematic, and phantasmagoric.[4] In what follows, I will ground them in the three philologically confused German terms for "screen": *Fläche*, *Leinwand*, and *Schirm*; apply them to the historical avant-garde; and push Moholy-Nagy's embrace of phantasmagoric screens to the breaking point. What remain are the ruins of an interwar screen fantasy that echoes uncomfortably with our present. Crucial, however, is not only the predictive power implicit in Moholy-Nagy's experiments in art and media but also his

4. Elcott, "Phantasmagoric *Dispositif*."

inability or refusal to carry out the radical transformations that he himself pros-
elytized. But rather than rehearse another iteration of the tired tales of noble fail-
ure that regularly trail the historical avant-gardes, we will unpack Moholy-
Nagy's multimedia works and theoretical writings as they tease out the tensions
among the modernist surface (*Fläche*), the cinematic screen (*Filmleinwand*),
and the phantasmagoric scrim (*Schirm*) in the interwar period.

The trope of Malevich's white monochrome as projection screen reap-
pears regularly in the pages below. But the practice privileged by Moholy-
Nagy was neither painting nor film. Even as he was trained as a painter and
aspired to film, his primary practice was photography.[5] Nowhere was this
arrested development more manifest than on the covers of both editions of
his landmark publication *Painting Photography Film* (1925, 1927). The title
announced a teleological progression from painting to film via photography.
But the images that adorned the covers were abstract photographs, specifi-
cally, cameraless photographs (christened "photograms" by Moholy-Nagy, a
nomenclature soon widely adopted) (fig. 2). By the mid- to late 1920s Moholy-
Nagy had largely abandoned painting but had not yet begun to make films.
Photography—specifically photograms—allowed him to paint in light and
pointed the way toward future light films. And photograms offered something
else. To make a photogram, as Moholy-Nagy explained in *Painting Photogra-
phy Film*: "The light is allowed to fall on to a screen [*Schirm*] (a photographic
plate, light-sensitive paper) through objects with different coefficients of
refraction or to be deflected from its original path by various contrivances; cer-
tain parts of the screen [*Schirm*] are shaded, etc."[6] The photosensitive surface
serves as a screen—with a memory. Photograms thus theoretically constellate
and physically secure Moholy-Nagy's most successful screen practices in a
manner that can be exhibited and studied in the present. And their success,
though fleeting, cannot be doubted. By the end of the 1920s, alongside his rad-
ical reading of Malevich's white monochrome, Moholy-Nagy pronounced that
photograms were "the most successful transposition thus far of fluid light onto
a projection screen [*projektionsschirm*]—in this case, the sensitive layer of the
photographic paper."[7] Photograms ultimately failed to fulfill Moholy-Nagy's
ambitions for a new screen regime, as demonstrated below. But no matter. It
is the at times surgical, at times fantastic effort to dissect the screen into its
competing permutations that makes Moholy-Nagy's art and theory emblematic
of art in the first screen age.

5. See Witkovsky's related argument vis-à-vis photomontage in *Foto*, 27.
6. Moholy-Nagy, *Malerei Photographie Film*, 25.
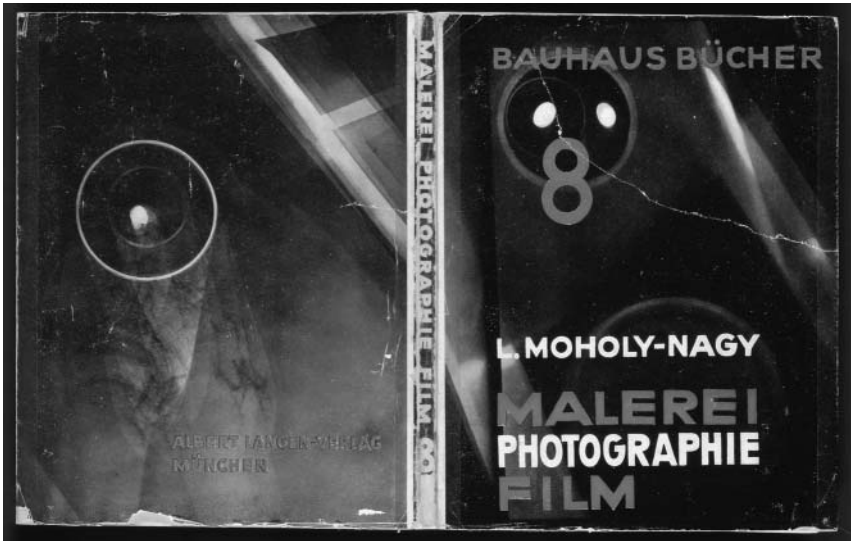7. Moholy-Nagy, *von material zu architektur*, 89.

Figure 2. László Moholy-Nagy, *Painting Photography Film* (1925). Book covers based on photograms.

Fläche/Leinwand/Schirm

Fläche (surface), *Leinwand* (screen), *Schirm* (scrim). Each of these *dispositifs* and terms constitutes the screen as "both material object and symbolic thing, a first-order as well as a second-order technique."[8] "Both/and" rather than "or": *Fläche*, *Leinwand*, and *Schirm* are all variously constituted as material objects and symbolic things, orders that forever constitute one another.[9] The significance of the flat surface (*plane Fläche*) in modernism nearly goes without saying. From Denis and Malevich to Clement Greenberg and T. J. Clark, modernists have convincingly linked the richness of the avant-garde to its ability to give flatness endlessly complex and compatible values.[10] In its strongest articulations, modernism asserted the flat canvas as both material object and symbolic thing, for there is "no fact without the metaphor, no medium without its being the vehicle of a complex act of meaning."[11] For Clark and others, the metaphors and complex acts of meaning conjured by the fact of the flat surface included printed matter and popular prints; the reality of vision; the superficiality of

8. Siegert, *Cultural Techniques*, 13.
9. See esp. Latour, "Berlin Key."
10. See esp. Clark, *Painting of Modern Life*, 12–13.
11. Clark, "Clement Greenberg's Theory of Art," 152.

spectacle, such as when Paris was reduced to so many stage flats for the 1867 Universal Exposition; as well as the famous modernist assault on perspectival space.

This list has been extended widely, by artists, critics, and historians. Clark specifies the richness of the avant-garde between the years 1860 and 1918. It is easy to mistake 1918 as the year that the painted *Leinwand* (canvas) became the cinema *Filmleinwand* (screen), with Malevich's *White on White*, painted in the year 1918, as the hinge. In the 1950s Hans Richter, a central practitioner and theorist of abstract film before and after World War II, played on the twofold connotation of *Leinwand* as canvas and screen in an effort to extend the reign of the flat surface as material object and symbolic thing: "The simple square of the movie screen could easily be divided and 'orchestrated.' These divisions or parts could then be orchestrated in time by accepting the rectangle and the 'movie-canvas' as the form element. Thus it became possible to relate (in contrast-analogy) the various movements on this 'movie-canvas' to each other—in a formal as well as temporal sense."[12] Richter's language is convoluted. Two facts are crucial. First, it is impossible to overstate how important this classic modernist, self-reflexive reading has been for post–World War II art, film, and theory. From Richter scholars, to filmmaker-theorists like Standish Lawder and Malcolm Le Grice, to the curators of the recent Richter retrospective in Paris, London, and Los Angeles (2013–14), and even media historian-theorists like Anne Hoormann, there is near universal agreement that "perhaps more than in any other avantgarde film, [*Rhythm 21*] uses the movie screen as a direct substitute for the painter's canvas, as a framed rectangular surface on which a kinetic organization of purely plastic forms was composed" (fig. 3).[13] This is the first discursive fact. The second discursive fact is that nearly every avant-garde figure in Richter's orbit—not least Moholy-Nagy, De Stijl impresario Theo van Doesburg, and Richter himself—argued vociferously against such a reading during the 1920s. In a famous 1929 polemic by Doesburg—among the earliest champions of Richter's first efforts and a clear theoretical influence on his early writings—he dismisses the work of Richter and Viking Eggeling in which "only a single part of the film-light-space [*Film-Licht-Raum*] is enlivened: the surface [*Fläche*] facing the viewer. But it is precisely this surface that must be exploded to discover the space-time

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12. Richter, "From Interviews with Hans Richter," 27. See also Richter, *Hans Richter*, 131.

13. Lawder, *Cubist Cinema*, 49. See also Le Grice, *Abstract Film and Beyond*, 26; Hoormann, *Lichtspiele*, 182; and Michaud, "Toward the Fourth Dimension," 52–55. Like Michaud's, Benson's account is more sophisticated than those advanced in the 1970s, but it still privileges the Rhythm films' capacity to "allow the screen to represent nothing but itself" (Benson, "Hans Richter," 24). See also Hoffmann, "Hans Richter," 78.
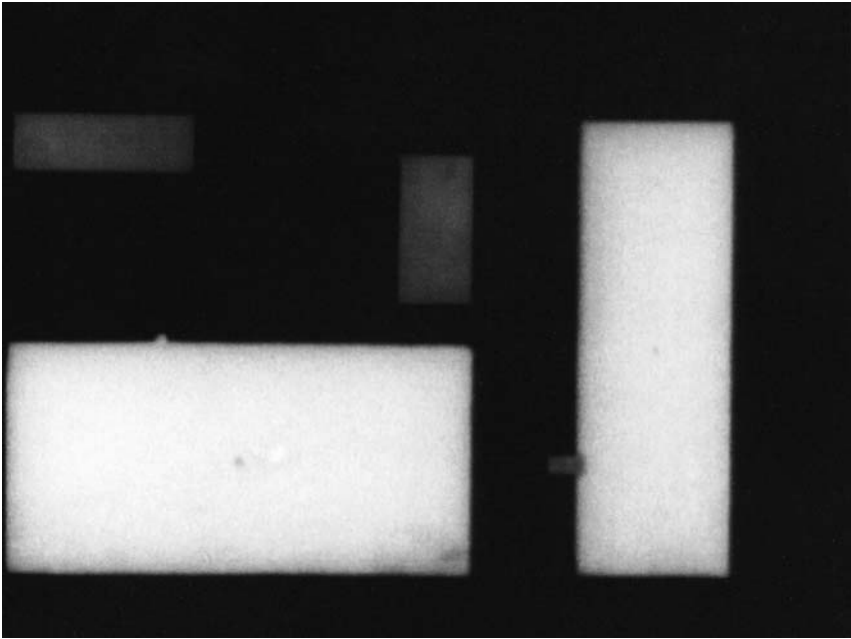
Figure 3. Hans Richter, *Rhythm 21* (1923). Frame enlargement.

film continuum behind it. There and nowhere else lies the creative sphere of formed [*gestaltenden*] film!"[14] To illustrate his polemic, Doesburg pointed to the tesseract or hypercube, which he first theorized simultaneous to this initial encounter with filmic abstraction (fig. 4).[15] The caption to the now-famous diagram reads: "Schematic representation of a three-dimensional space activated simultaneously in all directions. . . . The black field represents the limited canvas/screen [*Leinwand*] in use up until now." Doesburg desired not a bounded screen (*begrenzte Leinwand*) but a boundless light-space (*unbegrenzte Lichtraum*). The dream for a boundless screen was partly realized by Doesburg in his so-called ciné-dancing hall in Café L'Aubette from 1927–28 and survives well into the present in any number of the collective fantasies we call advertisements, such as the campaign for the Samsung S8 smartphone "Unbox Your Phone,"[16] and the emergent phenomenology of virtual reality (fig. 5). So much for the ideal of *die plane Fläche*, the flat surface. As a

14. Doesburg, "Film als reine Gestaltung," 246–47.
15. See Doesburg, "Kritische Tesseracts." See also Hoek, *Theo van Doesburg*, 393–95.
16. Among numerous still and moving advertisements, see, e.g., https://www.youtube.com/watch?v=-cCjcP4H8BE (accessed September 20, 2023).
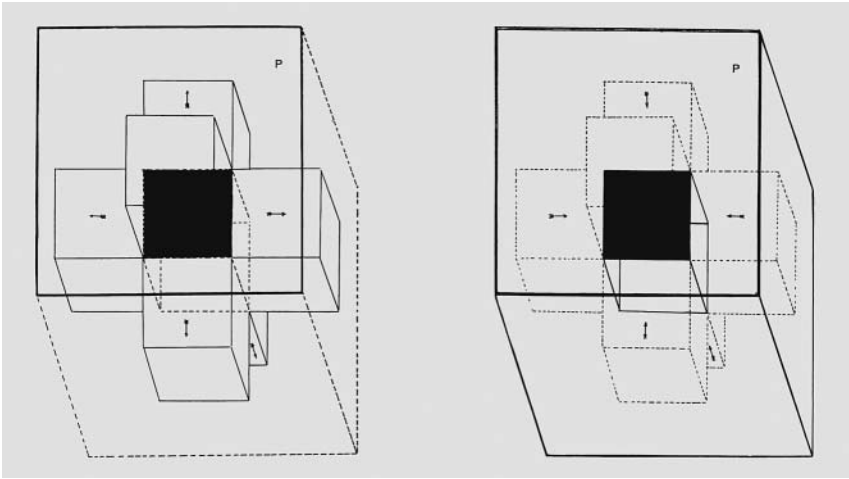
Figure 4. Theo van Doesburg, schematic diagram in "Film als reine Gestaltung," 242.

Figure 5. "Unbox Your Phone" (2017). Advertisement for Samsung S8.

material object and symbolic thing, the flat *Fläche* was anathema to the avant-garde, as was the direct extension from *Leinwand* (canvas) to the *Filmleinwand* as "movie-canvas."

Moholy-Nagy and the avant-garde desired a different *dispositif*, and they found it in and around the term *Schirm*. At its most fundamental, *Schirm* (scrim) was the material object and symbolic thing Moholy-Nagy hoped would replace the *Leinwand* (canvas/screen). Whereas the modernist *Leinwand* proffered materiality, opacity, rectangularity, limits, and flatness, Moholy-Nagy's *Schirm* was to instantiate immateriality, transparency, boundlessness, and space. The course charted from *Leinwand* to *Schirm* followed the teleology announced in the titles of Moholy-Nagy's two Bauhaus books: *Painting Photography Film* and *From Material to Architecture*. Stated differently, where the flat surface (*Fläche*) was the modernist alternative to the illusionistic easel painting, the *Schirm* was Moholy-Nagy's avant-garde alternative to the illusionistic cinema screen.

But *Schirm* was hardly Moholy-Nagy's neologism. His "ideal screen" had a long history that helps locate it as both material object and symbolic thing. *Schirm* is the German cognate of the English *screen*. In English, however, the term *screen* quickly monopolized the symbolic, technical, and material dimensions of projection surfaces. Hollywood promoted *screen stars*, and *silver screen* stood in metonymically for the entire industry. Screens were also the subject of numerous cinema operating manuals, industry patents, and so forth. Lastly, no material or disposition was beyond the reach of *screen*. Aluminum, canvas, glass, no matter. In French, the cognate *écran* assumed the same omnibus function.

Not so in German.[17] Early German cinematic terminology—whether in popular reviews, cinema operating manuals, or avant-garde treatises—rarely differentiated between a range of terms rendered in English as "screen": *Leinwand* (canvas), *Wand* (wall), *Schirm* (screen), *Fläche* (surface), often preceded by *Bild* (picture), *Lichtbild* (slide), *Film* (film), or *Projektion* (projection), creating compound terms like *Projektionsschirm* (projection screen), *Bildfläche* (picture-surface), and *Filmleinwand* (film-canvas). During the 1910s *Leinwand* emerged victorious as both a material object and a symbolic thing. As intoned in an important 1926 anthology: "The first film projection surface [*Filmprojektionsfläche*] was the canvas [*Leinwand*]; despite all experiments

17. Contemporary German employs *Leinwand* for cinema and *Bildschirm* for electronic devices and generic screens. See, e.g., Haberl and Schlemmer, *Die Magie des Rechtecks*. This distinction did not solidify until after World War II.

with other flickering surfaces [*Flimmerflächen*], it remains, in my experience and conviction, the best."[18] More important still, *Leinwand* soon monopolized the symbolic order of commercial film, no doubt in part due to its artistic associations (the painted canvas) vital for the desired embourgeoisement of popular entertainment cum seventh art. By the 1920s popular illustrated magazines like *Filmland*, *Ufa-Magazin*, or *Film-Magazin* described movie stars as *Leinwandsterne*, that is, *screen stars* or literally *canvas stars*. Here the materiality of canvas and screen was subsumed entirely beneath the symbolic order of the movies. Likewise, the only *Schirm* one finds in these magazines is a parachute, parasol, or umbrella, known in German as *Fallschirm*, *Sonnenschirm*, and *Regenschirm*.[19] In other words, despite its status as a cognate of *screen* and *écran*, *Schirm* was quickly excluded from the symbolic realm of the movies.[20] By the 1920s the German entertainment industry entertained only one symbolic name for the screen, *Leinwand*, now divorced from any material or technical associations with canvas, linen, or walls.

The term *Schirm* never gained a foothold in the symbolic order of cinema, let alone painting.[21] It survived only as a technical object of complex materiality. Prior to the invention of cinema, the primary operation of a *Schirm* was unambiguous: screens screened. They screened sun, rain, or wind.[22] But at the moment they claimed the material role of projection screen and were denied the symbolic role of the silver screen, *Schirme* maintained a paradoxical relationship to their own materiality. Stated bluntly and repeatedly in photography and cinema manuals, even as a *Schirm* was bound to no specific

18. Richter, "Das Lichtspieltheater," 20.

19. See *Filmland*, nos. 1–8 (1924–25); *Ufa-Magazin* 1, no. 1–2, no. 22 (1926–27); *Film-Magazin* 3 (1929).

20. *Schirm* was the obvious but hardly definitive German equivalent of *screen* and *écran*, as evidenced by a trilingual lantern-slide catalog published out of Paris around 1900. Here *écran* and *screen* are used in parallel, while the German is dominated by variations on *Schirm* (*Schirm*, *Auffangschirm*, *Projektionsschirm*), with occasional variants on *Wand*, or wall (*Wand*, *Projektionswand*). See Gilmer, *Gilmer Catalogue no. 26*.

21. In the first years of cinema, the 1897 *Brockhaus Conversational Lexicon* distinguished the kinematograph from Edison's kinetoscope in that only the former could exhibit living pictures before an assembled audience all at once, that is, "through the projection of images on a screen [*Schirm*]" (*Brockhaus' Konversations-Lexikon*, "Kinematograph," 657). But the term did not stick. It survived instead almost exclusively in the technical literature. See, e.g., Liesegang, *Zahlen und Quellen*.

22. See, e.g., Eder, *Jahrbuch für Photographie und Reproduktionstechnik*. Here the accounts of early cinema experiments describe the film screen extensively and exclusively as a *Schirm*. In the yearbooks for photography and reproduction technology from 1893, 1894, and 1895, however, *Schirm* is less common and still generally referred to in terms of protective shield, with only occasional and exceptional use of the term in relation to projection screens. See also the recent *longue durée* history in Campe, "'*Schutz und Schirm*.'"

material or technique, "the material of which the screen is made is of far greater import than most people believe."[23] Each material surface had its proponent and, often, its patent holder. In this context, *Leinwand* (canvas) was merely a material, like cotton, aluminum, glass, and painted walls, divested of all symbolic value. In the universe of industry patents and operating manuals, symbolic value was bestowed by the trademark office: screens composed of minuscule glass pearls, for example, were sold under the trade name Perlantoschirm.[24]

The ontology of the screen was thus split. And it appeared to be split along a material-symbolic axis. On the one hand was the symbolic domain of the *Leinwand*, in which *Schirme* were present merely as umbrellas and parachutes. On the other hand, there was the technical and material order of the *Schirm* in which *Leinwand* was nothing more and nothing less than a fabric. Decades later this bifurcated ontology resurfaced in convoluted form in the philosophical ruminations of artists like Hans Richter and theorists like Stanley Cavell, who famously pronounced: "The screen is not a support, not like a canvas; there is nothing to support, that way. It holds a projection, as light as light. A screen is a barrier."[25] In the early decades of the century, matters were at once simpler and more complex: simpler inasmuch as Cavell merely rehearses early twentieth-century definitions of the *Schirm*; more complex in that he cannot channel the dual nature of the canvas, at once material object (*Leinwand*) and symbolic thing (the *Leinwand*). But Cavell cannot be faulted. For the early twentieth-century distinction between *Leinwand* and *Schirm* was and remains too dumb for philosophers and aestheticians to recognize, let alone theorize. (That would wait until electronic screens or *Bildschirme* in the post–World War II period.) Like all other practitioners and theorists of art and media in interwar Germany, Moholy-Nagy inherited an ontology of the screen bifurcated along philological lines. And it is clear that he maximally exploited the material and technical dimensions of *Schirm* to create paintings on numerous synthetic materials that recall, in equal measure, early film operating manuals and constructivist laboratories. Yet as evidenced by Moholy-Nagy's writings and art,

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23. *Photographische Industrie*, "Der Projektionsapparat und die Projektionskunst." This section rehearses a nineteenth-century American manual: "The material of which the screen or sheet is made is of far more importance than would be thought by an inexperienced worker. A careful artist knows that a good picture cannot be produced on crumpled or dirty paper; and the lantern exhibitor should be quite as careful to provide for his pictures an unblemished and even surface" (Hepworth, *Book of the Lantern*, 89).

24. Schrott, "Der heutige Stand der Kinematographie."

25. Cavell, *World Viewed*, 24.

the *Schirm* was not only a material object but also a symbolic thing—a combination that leads to the heart of phantasmagoria.

Phantasmagoric Screens

In European languages, fabric names were woven on Orientalist looms. Gauze from Gaza. Muslin from Mosul. Calico from Calicut. But linen and *Leinwand* are of West Germanic origin and cognates of the Latin name for the flax plant, linum. The great architectural authority Gottfried Semper famously (and erroneously) argued that *Leinwand* belongs to a constellation of terms, including *Gewand* (garment) and *Wand* (wall), which collectively disclose the true nature of the wall.[26] Primitive walls woven from diverse materials were the first means to establish the "home," that is, "to separate interior life from the outside."[27] Extrapolating from Semper, Bernhard Siegert arrives at the following essential formula: "If we define architecture as a cultural technique, then architecture becomes that which processes the opposition between inside and outside within a culture."[28] Art generally and the *Leinwand* in particular partook in this processing: first as images that became one with the wall, such as mosaics, tapestries, and frescoes; later as enormous canvases, such as those painted by Tintoretto and Veronese for the Doge's Palace in Venice, that covered vast stretches of wall and ceiling. The enduring role of painted canvases was not, however, as a separation of inside and outside; rather, just as architecture made the division between inside and outside operational through doors and windows,[29] so too did painted canvases assume the role of window onto the world.

Screens have an entirely different etymology and history.[30] Screens (*Schirme*), as mentioned above, were once primarily protective shields. In German, they remain so. Protection against the rain is offered by a *Regenschirm* ("rainscreen" or umbrella), just as other screens guard against the sun or fire. But unlike walls, they do not define inside and outside. One stands under an umbrella or behind a screen, not inside them. Whereas walls divide inside from outside, screens partition spaces. In English, *screen* retains this meaning primarily as a verb. But the rare noun is found in architectural discourse,

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26. Semper, *Die vier Elemente der Baukunst*, 57. In this instance, Semper was a poor philologist: *Leinwand* (canvas) has no etymological relation to *Wand* (wall). Nonetheless, the false etymology *Wand-Leinwand* was accepted throughout early twentieth-century avant-garde and film discourses.

27. *Der Stil in den technischen und tektonischen Künsten*, 228. *Home* is in English in the original.

28. Siegert, "After the Wall," 20.

29. See Siegert, "Doors"; and Siegert, *Cultural Techniques*.

30. See, e.g., Huhtamo, "Elements of Screenology." Erkki Huhtamo does not address the distinction between *Leinwand* and *Schirm*.

where, for example, perforated choir screens (also known as chancel or rood screens) separate the choir from the nave of medieval churches.[31] And it was the English language that first introduced the *screen* as a projection surface—specifically, in the phantasmagoria.

The phantasmagorias that proliferated at the end of the eighteenth century differed in countless respects, except one: they all manufactured the experience of images able to inhabit the same space-time continuum as the viewers. Whether conjuring the ghosts of Robespierre or a bloody nun, the lantern-slide images projected through the darkness on smoke or scrims appeared as real presences freed from any material support (fig. 6).[32] And it was the London phantasmagoria that inspired David Brewster to popularize the term *screen* as a projection surface.[33] Like a fireplace screen, the phantasmagoric screen was placed *between* the subjects and the source of light. But unlike a fireplace screen or choir screen or umbrella, the phantasmagoric screen had to render itself invisible: "The Phantasmagoria produces its effects by the same optical arrangement as the Magic Lantern, but . . . instead of their being exhibited on a white opaque screen, they are seen through a transparent screen of calico oiled or wetted."[34] The importance of transparency cannot be overstated. In French, for example, long before *écran* became the accepted term, the phantasmagoric screen was often described simply as "the transparent."[35] For the primary operation in the phantasmagoria was not to project images before an audience but to assemble, in a single space, spectators and phantasms (i.e., ghosts, but also Plato's *phantastiké*: images or simulacra).[36] Toward that end, images had to be freed from their material supports and allowed to enter the material reality of

31. See Jung, *Gothic Screen*. Of even greater relevance may be the iconostasis: the image-bearing screen before the chancel in Eastern Christian churches that evolved from the Byzantine templon. See Belting, *Likeness and Presence*, 225–60; Lidov, *Iconostasis*; and Gerstel, *Thresholds of the Sacred*.

32. For a history of the early phantasmagorias, including the ample relevant primary and secondary sources, see Elcott, *Artificial Darkness*, 78–91. For my theorization of the phantasmagoric *dispositif*, see Elcott, "Phantasmagoric *Dispositif*."

33. Brewster, *Ferguson's Lectures*, 265. This editorial note does not appear in the first edition of 1805. It also precedes by several years the earliest instance of *projection screen* recorded in the *Oxford English Dictionary*, which also references the phantasmagoria. The French *écran* would not be adopted for projection screens for half a century; the screen in Étienne-Gaspard Robertson's phantasmagoria, for example, was described as a *toile* (canvas) or, as addressed below, "the transparent." Early German phantasmagorias, also addressed below, projected on smoke rather than on screens. On the earliest recorded uses of the term *screen* as a projection surface in the phantasmagoria, see Casetti, "Primal Screens," 33.

34. *Saturday Magazine*, "Magic Lantern and Phantasmagoria," 104. Such definitions were commonplace already in the first decades of the nineteenth century.

35. See, e.g., Breton, *Les savants de quinze ans*, 329; and Chevallier, *Le conservateur de la vue*, 289–90.

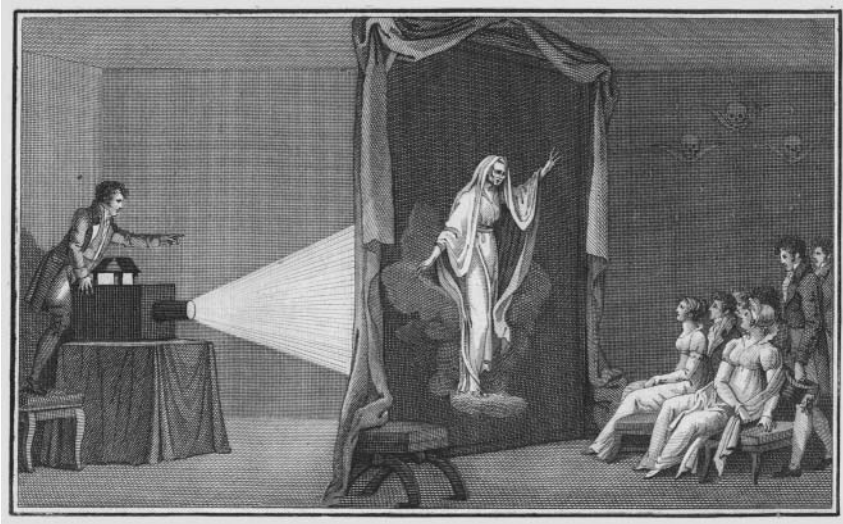36. See Stoichita, *Pygmalion Effect*, 1.

Figure 6. Phantasmagoria, frontispiece to Breton, *Les savants de quinze ans*, vol. 2.

the spectators' time and space: "The screen not being seen, the image appears to be suspended in the air, and the deception is complete, even to those accustomed to the exhibition."[37] Phantasmagoric images were perceived not as on-screen but as floating almost without material support in a pitch-black space. As advised in numerous eighteenth- and nineteenth-century accounts, "it is essential that the spectators ignore the place where the screen [*toile*] is located; this, in large part, is the crux of the illusion."[38] To free the images into the space of the spectators, the screen had to be rendered transparent (or translucent) and impossible to pin down. Accordingly—and as alluded to by Brewster—it can come as no surprise that the first phantasmagoric images were projected on clouds of smoke. The phantasmagoric séances convened in 1770s Leipzig by the necromancer Johann Schröpfer relied on "smoke surfaces,"[39] a technique first described by Edme-Gilles Guyot at the end of the 1760s.[40]

37. Hall, *Hall's Illustrated Catalogue*, 25.

38. *Le nouvel esprit*, "Spectacle fantasmagorique," 140.

39. Eberhard, *Abhandlungen vom physikalischen Aberglauben*, 77. Moholy-Nagy's phantasma-goric *Schirme* more closely resemble the smoke used by Schröpfer than the "transparent" used by Robertson and others; that is, Moholy-Nagy's phantasmagoric *Schirme* never entirely disappear and instead help constitute a ghostly presence.

40. See Guyot, *Nouvelles récréations physiques et mathématiques*, 231–32. See Mannoni, "Phantasmagoria," 392.

In whatever arrangement, phantasmagoric scrims facilitated demateri-
alized surface projections that dissolved the boundaries between images and
spectators. As part of an ensemble of materials, techniques, spatial configu-
rations, and desired subject effects, these screens (*Schirme*) constituted a
phantasmagoric *dispositif* that was distinct from the modernist flat surface
(*Fläche*) as well as from industrial cinema (*Filmleinwand*).[41] This tripartite
division can be mapped, albeit uncomfortably, onto classic avant-garde opposi-
tions between materiality and immateriality as well as reality and illusion.
Fläche is material and real; *Leinwand* is immaterial and illusionistic. *Schirm*,
however, challenges these oppositions. Rather than succumb to the traditional
avant-garde choice between material reality and immaterial illusion, Moholy-
Nagy advances a third option: immaterial reality, that is, phantasmagoric pres-
ences in our real time and real space.

Artists and critics in the interbellum period did not recognize an affinity
with phantasmagoria—a silence echoed in the scholarship since. But the pecu-
liar configuration of images and spectators, space and time, ventured by Moholy-
Nagy and his cohort may be understood best in terms of phantasmagoria. Stated
briefly: painted canvases and cinema screens implicitly (as windows on the world)
or explicitly (as modernist flat surfaces) articulate their strict delimitation
through the rectangular frame of the image. In phantasmagorias, images are
not framed like a painting or a window; rather, as its name suggests, phantas-
magorias gather images and spectators in a single space-time continuum. In
phantasmagorias—whether ghoulish or abstract—images abandon their frames
and enter our time and space.

However cursory, this account of the first phantasmagorias allows us to
recognize in Moholy-Nagy's screens an aesthetic ambition in tension with mod-
ernist painting and commercial film. Moholy-Nagy described these ambi-
tions through the clarity and poignancy of a rearview mirror in an apologia
penned in 1934 to Frantisek Kalivoda.[42] Here he justified his return to easel
painting as a concession to the technological, economic, and political realities
that impeded his dreams for aesthetic experimentation beyond the canvas,
which he elaborated vividly and wistfully. "I dream of hand-controlled or

41. On the phantasmagoric *dispositif*—its qualities, histories, derogatory connotations in critical the-
ory, and relationship to more recent art and spectacle—see Elcott, "Phantasmagoric *Dispositif*." Over-
views of the phantasmagoria abound. See, e.g., Nead, *Haunted Gallery*; and Warner, *Phantasmagoria*.

42. Kalivoda was a Czech architect and the editor of *Ekran* (a journal for modern film and photog-
raphy published in 1934, whose title was a Czechization of the French *écran* [screen], as opposed to the
normative Czech *plátno* [canvas]) and then of *Telehor* (a journal that published a sole issue in 1936,
dedicated to Moholy-Nagy; the title adopts the early television theorist Dénes von Mihály's early
term for universal image transmission at a distance, from the Greek *tele-horáō* [distant-vision]).

automatic light-apparatuses [*licht-apparaten*] that can throw light visions in the air, in vast halls, and on screens [*schirme*] of unusual properties, on mist, gas, and clouds."[43] This desire to supplant canvases with screens was announced most fervently in Moholy-Nagy's widely disseminated lecture from 1929 provocatively titled "The Problem of New Film: Do Away with Painting!" Here Moholy-Nagy returned to Malevich's *White on White* as a projection screen and exclaimed that "the outstretched, rectangular canvas [*leinwand*], the projection screen of our cinemas, is fundamentally but a technologized easel painting [*tafelbild*]. Our conceptions of spatial projections and space-light relations are utterly primitive. They are exhausted with a single image known to all: a beam of light projected through an aperture."[44] Moholy-Nagy aimed to overturn easel painting and commercial cinemas in favor of new space-light relations. He may not have realized his ideal screen for light-and-shadow effects. But he and a motley crew of painters, filmmakers, theater directors, architects, and impresarios of varied stripes ventured a series of experiments across media that adumbrate an as-yet-untold history of abstract painting, film, and phantasmagoria. It is a history neither of the modernist canvas nor of the traditional film screen but of something akin to the phantasmagoric scrim.

The Fourth Wall Made Visible

Most scrims are not wholly phantasmagoric. But they are almost always proximate to the cinematic. As Laura Frahm has definitively demonstrated, cinematic materials, procedures, and logics infiltrated every corner of the Bauhaus, not least in the embrace of screens.[45] Among the best documented and least revolutionary were those employed for the color-light plays (*Farbenlichtspiele*) of Ludwig Hirschfeld-Mack and others in the orbit of the Bauhaus.[46]

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43. Moholy-Nagy, "Brief an Fra. Kalivoda," 116. The contemporaneous and energetic translation by F. D. Klingender translates *Schirme* somewhat nonsensically as "reflectors" (Moholy-Nagy, "Letter to Fra. Kalivoda," 30). Apparently the substances enumerated by Moholy-Nagy—mist, gas, and clouds—were too "unusual" to be recognized as screens by his English translator. At the same time, Moholy-Nagy updated a 1920s text to foreground his desire for film to produce "spatial transformations through light and through iridescent screens [*schillernde schirme*]" ("vom pigment zum licht," 120). In the original version, Moholy-Nagy praises abstract light projections that could produce "spatial vibrations with iridescent light emulsions" ("geradlinigkeit des geistes," 5).

44. Moholy-Nagy, "das problem des neuen films" (*Bildwart*), 152. The talk was concurrently published in *Internationale Lehrfilmschau* and then republished repeatedly throughout the decade. On the broader shift from *Tafelbild* to *Bildraum* circa 1922, see Herzogenrath, "Bildfläche—Wandbild—Bildraum."

45. Frahm, *Design in Motion*. Among numerous striking examples, Frahm's discussion of celluloid textiles and textile screens at the Bauhaus resonates powerfully with my attempt, above, at a media archaeology of screens by way of textiles, especially canvas/screen (*Leinwand*).

46. For an overview, see Hapkemeyer and Stasny, *Ludwig Hirschfeld-Mack*.

In the mid-1920s Hirschfeld-Mack performed works like the *Color Sonatina II (Red)* (ca. 1923) across Europe to critical and popular acclaim (fig. 7). The disposition of projector, screen, and audience resounded with that of the phantasmagoria, above all, its "transparent canvas [*Leinwand*]."[47] The terminology echoed that of Doesburg: "light-field" (*Lichtfeld*) was how Hirschfeld-Mack defined the basic unit of the color-light play.[48] But the fundamental allegiance lay in the painting and theory of Wassily Kandinsky and Paul Klee. So the results—abstract luminous forms in motion—were an extension of the painted canvas (*Leinwand*) and its logics: flatness, elemental forms, elemental colors. As Hirschfeld-Mack argued:

> Let us look at paintings by Kandinsky or Klee: here are all the elements for actual movement. . . . It had become a necessity actually to move the color-form planes. A new technique—direct colored light projected on to a transparent screen [*Leinwand*]—has enabled us to achieve colors of the most flowing intensity. . . . The colored light is projected through these templates, which are placed between the screen [*Leinwand*] and the sources of light.[49]

Hirschfeld-Mack readily acknowledged—and critics consistently recognized—that his *Lichtspiele* appeared "like an early water color by Paul Klee, [where] colorful planes move atop, against, and through one another."[50] Klee's watercolor *Fugue in Red* (1921), for example, depicts bright triangles, circles, diamonds, rectangles, and complex forms, alongside trails of their progressively darker shadows, all on a black ground (fig. 8). The additive color and visual music implied (but only implied) by Klee's composition and title were realized by Hirschfeld-Mack in superimposed luminous forms flanked by variegated doubles—whose real movements were accompanied by actual music in real darkness. Crucially, critics consistently understood the forms of Hirschfeld-Mack to move "*on the black ground of a transparent screen [Leinwand]*."[51] Unlike the phantasmagoria, where images were unmoored from their material supports and freed into the time and space of the spectators, Hirschfeld-Mack's abstract forms remained

47. Hirschfeld-Mack, *Farben Lichtspiele*, 1.

48. Hirschfeld-Mack, *Farben Lichtspiele*, 1. Cf. Doesburg's discussion of *lichtveld* in his earliest theorizations of abstract film (an engagement utterly at odds with Hirschfeld-Mack's *Farbenlichtspiele*): "The light field is without limit [*onbegrensd*] on all sides" ("Licht- en Tijdbeelding," 61).

49. Quoted in Moholy-Nagy, *Painting Photography Film*, 80; Moholy-Nagy, *Malerei Fotografie Film*, 78. Translation modified.

50. Review of the "Absolute Filmmatinee" by W-r. in the *Berliner Zeitung*, May 5, 1925. Excerpted in Hirschfeld-Mack, *Farben Lichtspiele*, 23.

51. Review from Leipzig, February 4, 1925. Excerpted in Hirschfeld-Mack, *Farben Lichtspiele*, 21. Emphasis added.
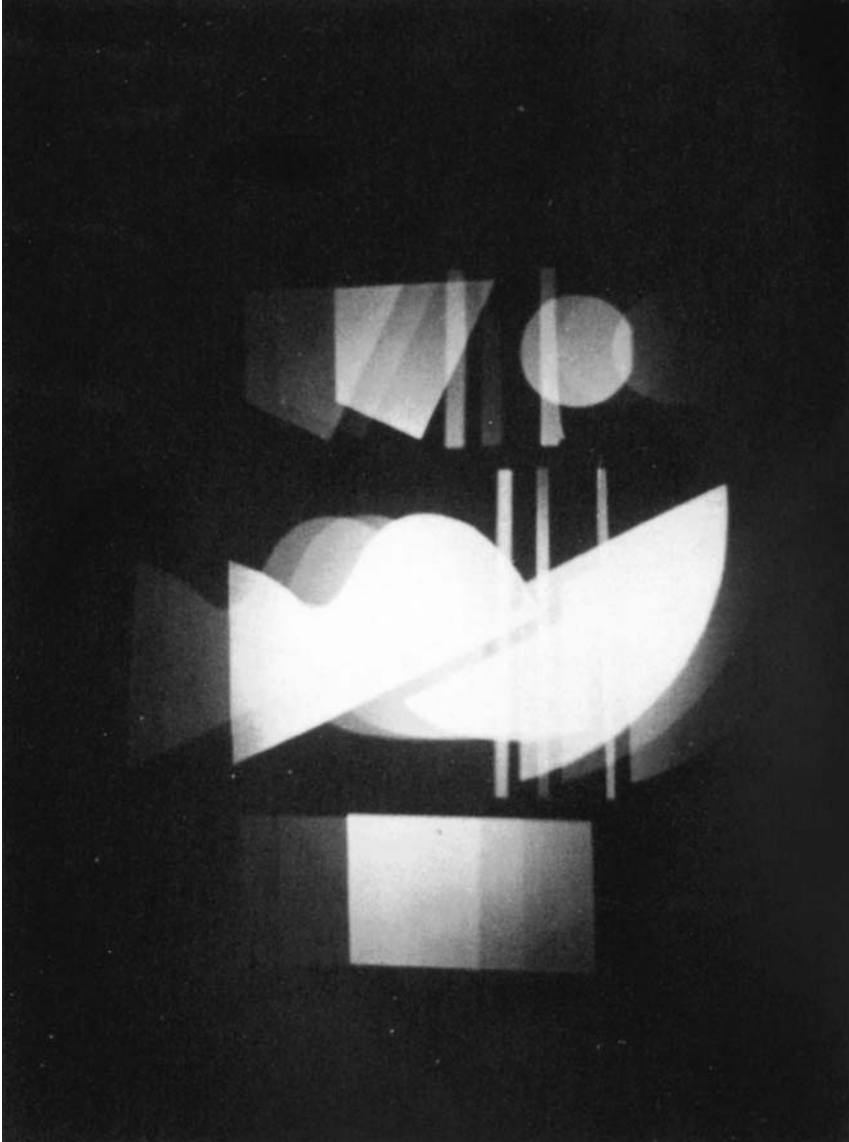
Figure 7. Ludwig Hirschfeld-Mack, *Color Sonatina II (Red)* (1923–24). Photograph of the projection.

Figure 8. Paul Klee, *Fugue in Red* (1921). Watercolor, 9.6 × 12.4 in (24.4 × 31.5 cm). Zentrum Paul Klee, Bern.

rigorously bound to the canvas and its flat surface. Hirschfeld-Mack made no effort to change the basic canvas-viewer relationship received from his teachers. Instead, he borrowed their forms and put them in motion. Although technically a scrim, the surface mobilized by Hirschfeld-Mack was effectively just that: a surface. Richter's pseudo-history on the evolution from *Leinwand* (canvas) to *Filmleinwand* (film-canvas/screen) here finds its fulfillment.

In the highly influential Nietzschean division of the arts into competing Apollonian and Dionysian camps, the elemental forms and colors of Hirschfeld-Mack bound to the surface of the canvas clearly occupied the Apollonian image-world of dreams, where the laws of the land were "Know thyself" and "Not too much!" In a word: "measured limitation" (*maßvolle Begrenzung*).[52] At the Dionysian end of the spectrum was an intoxicated reality, in which the divisions between artworks and spectators dissolve. Here lay the untapped, phantasmagoric potential of cinema. In his short introduction to a 1927 image dossier of architect Hans Poelzig's Deutsches Lichtspieltheater (German Movie Theater) in Breslau, Wilhelm Lotz, editor of *Die Form*, the hugely influential organ of the German Werkbund, amplified the avant-garde desire for new spatial

52. Nietzsche, *Birth of Tragedy*, 19.

relations enabled by cinema (fig. 9). Compared to Poelzig's earlier Capitol Movie Theater in Berlin, Lotz argued:

> The interior [of the Deutsches Lichtspieltheater] is less rigidly bound [*begrenzt*]. The ceiling is lost in visionary reverie and becomes unreal. . . . Spatial boundaries [*Raumbegrenzung*] lose their worth; everything is subordinated to the flow of void- and light-formed values, which emerge untethered from the darkness and disappear back into the darkness. Light is no longer subservient but rather a form-building power.[53]

Such revelry in the dark proved an avant-garde exception (more on this below). But the dissolution of boundaries between inside and outside, spectators and images, stage and auditorium, was at the core of Weimar experiments in theater, which briefly served as Moholy-Nagy's lodestar.

Moholy-Nagy employed phantasmagoric techniques and effects across every medium and venue in which he worked. But phantasmagoria congealed nowhere more densely than in his theatrical experiments in the twilight years of the Weimar Republic. The prevalence of screens on today's stages has perhaps inured us to the radicality of their conjunction in decades past. If directors and set designers like Ivo van Hove and Jan Versweyveld have successfully planted screens in avant-garde and mainstream theaters in twenty-first-century capitals like Amsterdam and New York, the litany of antecedents is meager (and in need of further scholarship). A true media archaeology could venture to late eighteenth-century phantasmagorias and beyond. A shorter avant-garde genealogy must be anchored in Weimar theater.[54] Moholy-Nagy theorized a "theater of totality" as a laboratory for technological media experimentation.[55] The year 1929 brought two opportunities to turn theory into theater.[56] At the experimental Kroll Opera Berlin, Moholy-Nagy incorporated trapezoidal screens, film projections, and light-and-shadow effects into his Bauhaus-inspired sets for *Tales of Hoffmann*, a critical failure that succeeded, at the very least, to impress Doesburg, who reproduced filmstrips from the production in his landmark 1929 essay "Film as Pure Creation" (fig. 10).[57]

The second production enables a more direct interrogation of phantasmagoric scrims and is of vastly greater consequence for the history of theater, as it

53. Lotz, "Hans Poelzigs Deutsches Lichtspieltheater," 153.

54. For overviews, see Mildenberger, *Film und Projektion auf der Bühne*; Baugh, *Theatre, Performance, and Technology*; Ebrahimian, *Cinematic Theater*; and Giesekam, *Staging the Screen*.

55. See esp. Moholy-Nagy, "Theater, Zirkus, Varieté"; and Moholy-Nagy, "Theater, Circus, Variety."

56. For a brief overview, see Köhler, "Here Light Becomes Space."

57. Doesburg, "Film als reine Gestaltung," 247. This is the only surviving visual evidence of the films projected in this production. See also Diebold's nuanced review, "Opernzauber 1929."
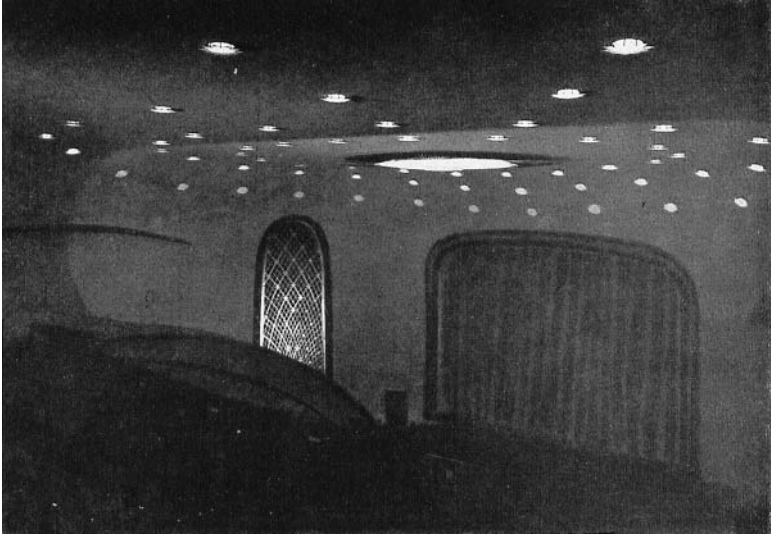
Figure 9. Hans Poelzig's Deutsches Lichtspieltheater in Breslau, interior, in *Die Form* 2, no. 5 (1927): 154, 156.

Realistische, filmplastische Elemente
aus dem Film ,,Mirakel" (Hoffmanns Erzählungen) von Moholy-Nagy (1929)

rade diese Fläche muß g e s p r e n g t werden, um hinter ihr die n e u e T i e f e, das raum-zeitliche Filmkontinuum zu entdecken. Dort und nirgends anders liegt die schöpferische Sphäre
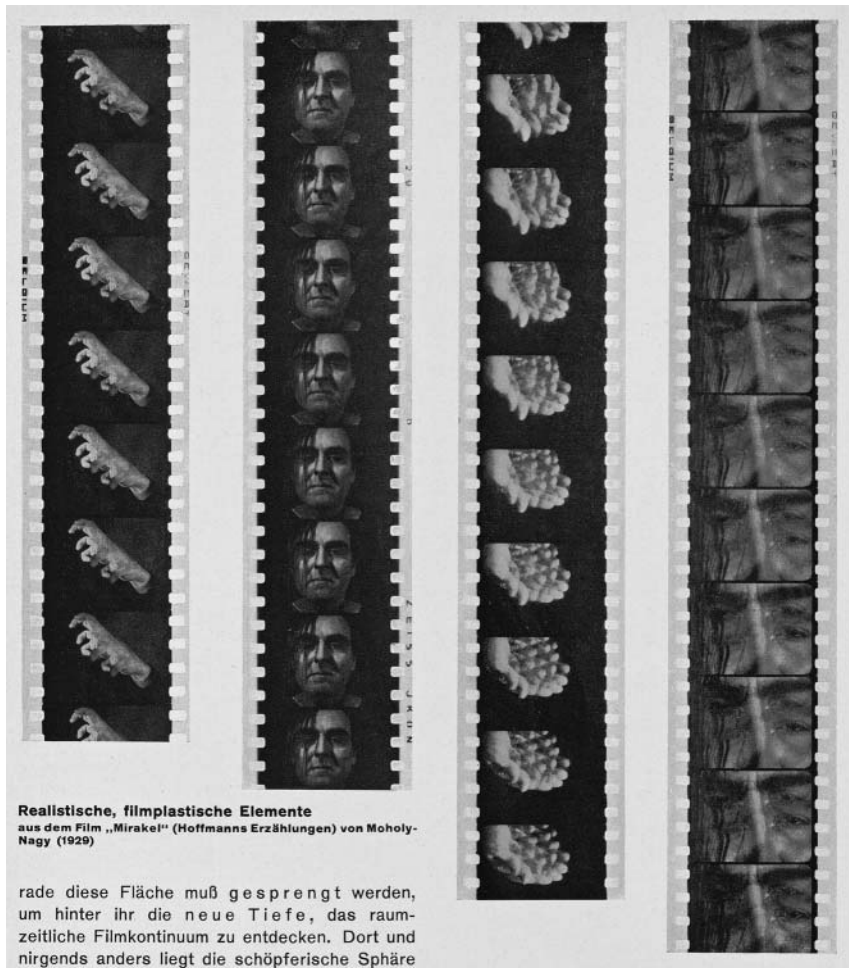
Figure 10. Filmstrips from the film *Miracle* (*Tales of Hoffmann*), by Moholy-Nagy. Avery Classics, Avery Architectural and Fine Arts Library, Columbia University.

marked the first and only production of the second Piscator Theater. Too often reduced to the role of mentor for Bertolt Brecht and the first exponent of epic theater, Erwin Piscator was a leading theater impresario of Weimar Germany. Piscator collaborated with figures such as Georg Grosz[58] and Walter

58. See esp. his projections and film animation work for Piscator's productions of *Das trunkene Schiff* (1926) and *Die Abenteuer des braven Soldaten Schwejk* (1928) and his reflections on montage, animation, screens, and other surfaces, in Grosz, "Randzeichnungen zum Thema"; and Grosz, *Hintergrund*.

Figure 11. Erwin Piscator (director) and Traugott Müller (sets), production of Ernst Toller's *Hoppla wir leben* at the Piscator Theater (1927).

Gropius,[59] and worked closely with the set designer Traugott Müller (fig. 11);[60] but he alone must be credited as the greatest experimenter in film onstage in the interwar period.[61] Moholy-Nagy's collaboration with Piscator was consequential, if short-lived. At the end of his life, Moholy-Nagy held fast to the dream of phantasmagoric scrims—"It would already be possible to enrich our spatial experience by projecting light on semitransparent screens, planes, nets, trelliswork, suspended behind each other"—to which he added, in a footnote, "I tried this in the scenic experiments for the play, 'Kaufmann of Berlin,' by Walter

59. On Piscator's (in)famous collaboration with Gropius to create a total theater (as distinct from Moholy-Nagy's ambitions for a "theater of totality"), see Gropius, "Wie ich zum 'Totaltheater' kam"; Piscator, "'Totaltheater' (Theatre of Totality)"; Woll, *Das Totaltheater*; and Norris, "Unrealized Dream of a Total Theater."

60. See, e.g., Müller's defense of their use of film and technology in "Stil Nebenbei."

61. See Piscator's theoretical-polemical treatise, with its indispensable reflections on the use of film and screens in theater: *Das politische Theater*; *Political Theatre*. For recent scholarship, see esp. Schwaiger, *Bertolt Brecht und Erwin Piscator*. Piscator's experiments in film and technology are in dire need of English-language scholarship.
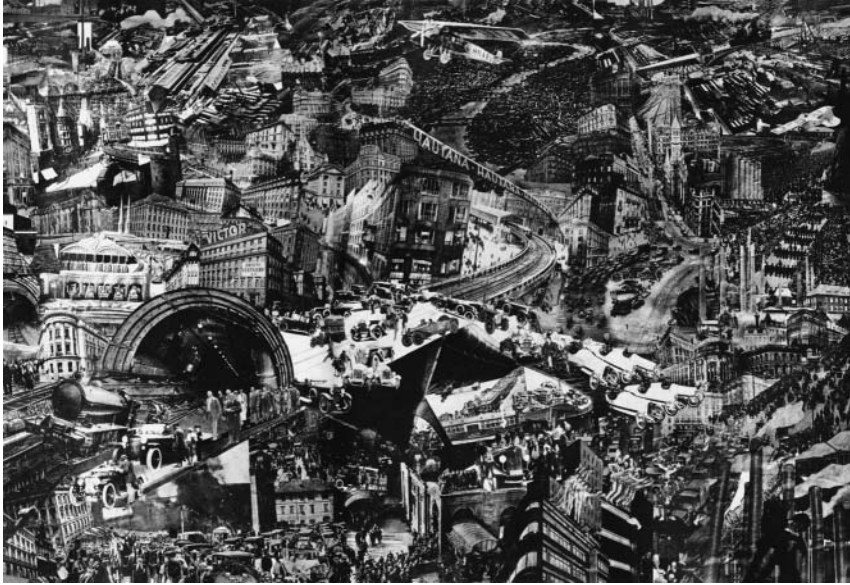
Figure 12. László Moholy-Nagy (and Lucia Moholy?), photomontage for projection
in *The Merchant of Berlin*, Piscator Theater (1929).

Mehring, performed at the Piscator Theater in 1929."[62] *The Merchant of Berlin*,
an inflation-era tale of capitalist greed loosely based on the *Merchant of Venice*,
was such a failure that it financially ruined the second Piscator Theater in one go.
But at least a handful of critics recognized its place in the history of theater, film,
and screens. As in prior Piscator productions, the sets were populated with pro-
jection surfaces. For the first time, Piscator and Moholy-Nagy also introduced
a scrim in place of the proverbial fourth wall for varied projections, beginning
with a city film, shot by Alex Strasser,[63] that resolved into a cityscape photo-
montage by Moholy-Nagy (fig. 12). In Piscator's theorization and in the critics'
estimation, the scrim played the role of the antique chorus, commenting on and
contextualizing the action by, for example, conjuring hyperinflation through
the projection of the accelerating exchange rate between the German mark
and the US dollar as it raced into the billions. The centrality of the scrim was
undisputed. But it lacked a recognized nomenclature. Critics described it as a

62. Moholy-Nagy, *Vision in Motion*, 283.
63. Strasser, "Film auf der Bühne."

"film veil" (*Filmschleier*),[64] "stage with projection-slide sets" (*bühne mit dia-positivkulissen*),[65] or a "gauze wall" (*Gazewand*). The last of these was penned by theater critic Bernhard Diebold, one of the sole supporters of Piscator's and Moholy-Nagy's efforts.[66]

Diebold provides among the most pregnant media-theoretical readings of the scrim to date. He writes: "A wall of shadows (which lay at the rear of Plato's cave) is wrenched from the background into the foreground." If Plato's cave has long served as a metaphor for cinema and its enchained spectators, its wrenching forward marks the ambivalent emergence of phantasmagoria. On the one hand, the detached screen could be the source of a dubious enlightenment: "The fourth wall before the public—which until now was no wall at all—is suddenly rendered visible by Piscator: the uncanny transparency is magically exceeded [*überzaubert*] . . . by film." The destruction of the proverbial fourth wall was a sine qua non of avant-garde theater. But, on the other hand, the means of its destruction—"magically exceeded by film"—feels closer to phantasmagoric obfuscation. Then again, the incontrovertible rule of phantasmagoria is that the screen cannot be seen; and here Piscator and Moholy-Nagy render the fourth wall visible. There can be no doubt that Moholy-Nagy's scrim lies somewhere between the industrial cinema screen and the abstract surface projections of Hirschfeld-Mack. But it does not achieve—or aim for—pure phantasmagoria. In theory, Moholy-Nagy's ideal screen (*Schirm*) rejects Malevich's flatness and cinema's window; and as a technical matter, it often occupies the place of the phantasmagoric scrim. But as an aesthetic and experiential phenomenon, it rejects its complete dematerialized invisibility. Precisely this hesitation—the slightest insistence on visibility and materiality—tempers Moholy-Nagy's teleological progression from painting to film and from material to (light) architecture.

Against Phantasmagoric Screens

The hesitation was not technological so much as ideological. Technologically, modernist phantasmagoria was difficult but by no means impossible to implement. Ideologically, phantasmagoric scrims defied avant-garde orthodoxy too vehemently to gain a foothold in acceptable practices or accounts. Moholy-Nagy openly embraced his pursuit of dematerialization.[67] But among many other avant-garde champions of abstract film (or at least

64. Ban, "Kollektiv-Theater," 505.

65. *Blättern der Piscatorbühne*, "Als wir noch Millionäre waren."

66. Diebold, "Nie kam die Straße derart aufs Theater," 25. Originally published in *Frankfurter Zeitung*, September 11, 1929. All further quotations from Diebold are from this source.

67. See esp. Somaini, "Toward Dematerialization."

its potential), wholly dematerialized projection surfaces were anathema. El Lissitzky, for example, traced "the variability of our space conceptions"— planimetric, perspectival, irrational, and imaginary—"and subsequent [forms] of [art]" from pre-Renaissance through impressionism, Pablo Picasso, Malevich, Vladimir Tatlin, futurism, and constructivism before "arriving at *nonmaterial materialism* [*amateriellen Materialität*]."[68] The highest form of space and the prospects for its future development lay in the imaginary: the space constituted by objects in motion. Abstract film was essential to this development—but with a major caveat:

> The inclusion of motion pictures as a means of realizing tasks of dynamic [form] by virtue of actual motion is a definite achievement of V. Eggeling and his successors. It represents the first step in the direction of building up imaginary space. However, the cinema depends on dematerialized surface projection [*dematerialiserte Flächenprojektion*] using merely a single facet of our visual faculties.[69]

Given the planar quality of Eggeling's films, Lissitzky cannot be faulted for his failure to see the potential for phantasmagoric modernism, in which the abstract, dematerialized forms would be freed from the projection surface and enter the material time and space of the viewer. (Had he recognized it, perhaps phantasmagoric painting would have pointed the way toward the imaginary space and nonmaterial materialism that he was after.)[70]

Of course, as it is invariably difficult to prove a negative, the avant-garde repression of phantasmagoria remains elusive. Two striking instances of (self-)censorship hidden in the archive exemplify the difficulties faced by any avant-garde artists or theorist who championed a world of immaterial phantasmagoric scrims enshrouded in darkness, instead of the ideologically correct material, flat surfaces, bathed in light. First, the fear of the dark made even sympathetic artists shy away from its powers.[71] In Moholy-Nagy's original articulation of the powers of unorthodox surfaces in the 1925 edition of *Painting Photography Film*, he foregrounded the role of darkness: "Experiments with painting on highly polished black panels (trolite) [which . . .] produce strange

68. Lissitzky, "A. and Pangeometry," 149; Lissitzky, "K. und Pangeometrie," 113. On Lissitzky's complex relation to immateriality, see Gough, "Constructivism Disoriented."

69. Lissitzky, "A. and Pangeometry," 148.

70. As it stands, Lissitzky's claims to imaginary space were dismissed immediately by scholars like Erwin Panofsky, who recognized in his "imaginary space through movement" a space no less Euclidean than any other. See Panofsky, *Perspective as Symbolic Form*, 71, 153–54n73.

71. On the avant-garde fear of the dark, see Elcott, *Artificial Darkness*, 165–74.

optical effects: it looks as though the color were **floating** almost without material effect in a pitch-black space [*tiefschwarzem Raum*] in front of the plane to which it is in fact applied."[72] In the 1927 revised edition of the book, Moholy-Nagy dropped the phrase *pitch black space* lest it inhibit his pursuit of "light-space." But his initial conceptualization was technically more precise: darkness fostered the immaterial floating effects he desired. Second, as much as the avant-garde envisioned a Hegelian consummation of the screen through its cancellation, it appears not to have been prepared to do away with the screen entirely. For example, at the climax of program notes composed for a March 6, 1927, screening of *Emak Bakia* (1926), Man Ray deviated so dramatically from the expected script that the remarks were subsequently excised from an otherwise highly similar account published in the British avant-garde cinema journal *Close Up*.[73] The original remarks read as follows: "'Emak Bakia' is a film composed of improvisations within a few square feet of space snatched from images in passing. If the screen on which it is projected could suddenly be snatched away, its projection through space itself would have no less meaning."[74] Here, surely, was an articulation of cinema that adhered to every dictum and aspiration of the avant-garde. Yet generations would pass before an artist prioritized the projection of light in space over the image on-screen. The landmark example is Anthony McCall's *Line Describing a Cone* (1973), where a point of light becomes a circle over the course of thirty minutes. Crucially, the space must be filled with haze, mist, or smoke so that the line of light slowly forms a three-dimensional cone. In his words: "*Line Describing a Cone* is what I term a solid light film. It deals with the projected light beam itself, rather than treating the light beam as a mere carrier of coded information, which is decoded when it strikes a flat surface (the screen)."[75] Man Ray could not have said it better himself. But no matter. For it would have fallen on deaf ears among the 1920s avant-garde. Indeed, McCall's solid light films are fully legible only within the *longue durée* history of art and media: "a new combination of modern abstraction and premodern theatricality," namely, abstract phantasmagoria.[76]

72. Moholy-Nagy, *Malerei Photographie Film*, 19. Bolded emphasis in original.

73. See Man Ray, "Emak Bakia."

74. Man Ray, program for Film Arts Guild, March 6, 1927, Société Anonyme Collection, Beinecke Rare Book Library, Yale University.

75. McCall, "Two Statements," 250. In the 2003 revision published in *October*, McCall deleted the parenthetical reference to the screen ("*Line Describing a Cone* and Related Films," 43). It can come as no surprise that McCall recounts an actual "screening" of *Line Describing a Cone* wholly devoid of screens—in the misty backyard of the artist and filmmaker Robert Huot at his farmhouse in New Berlin, New York, ca. 1974–75.

76. Schmidt, *Weiche Displays*, 27. See also Elsaesser, "'Return' of 3-D," 232–34; and Elcott, "Phantasmagoric *Dispositif*," 58–59.

In the interwar period, Moholy-Nagy and Man Ray could dream of demate-rialized projections in the dark, onto smoke or without screens; but their dreams remained avant-garde nightmares.

From Ideal Screen to Mere Matter

Few avant-garde artists or theorists knowingly explicated the technical con-figurations of phantasmagoric scrims. But many described phantasmagoric effects and encounters (achieved through a range of technical configura-tions). Without any knowledge of Lotz's description of Poelzig's movie the-ater (quoted above), the interwar art historian and cineaste Victor Schamoni described the abstract films of Oskar Fischinger in comparably phantasma-goric terms:

> These forms moved in every direction simultaneously, no longer merely on the surface of the projection screen [*Fläche der Bildwand*]; instead, the dark ground became a nearly endless space that extends seamlessly before the spec-tator in the dark auditorium. In this boundless [*unbegrenzten*], endless space luminous forms appear to float utterly weightlessly, directed or multifariously guided only by their whimsical impulses in a self-imposed rhythmic play.[77]

Lotz, Poelzig, Schamoni, and Fischinger were joined by Doesburg, Moholy-Nagy, and numerous others. Avant-garde artists and critics not only dreamed of images that would inhabit the same space-time continuum as viewers. They experienced and recounted such phantasmagoric encounters. They even dis-covered such encounters in quarters that, to current eyes and minds, seem entirely divorced from abstract film or phantasmagoric scrims. The most important related site within Moholy-Nagy's production and theorization was surely his cameraless photographs or "photograms," which remained a linchpin of his prac-tice from his 1922 "discovery" until his 1946 death.[78]

As discussed above, Moholy-Nagy conceived of photograms as screens that capture abstract light-and-shadow effects, "the most successful transposi-tion thus far of fluid light onto a projection screen [*projektionsschirm*]—in this case, the sensitive layer of the photographic paper."[79] The critic Ernst Kállai

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77. Schamoni, *Das Lichtspiel*, 51. The text derived largely from his 1925–26 art history disserta-tion, "Ueber die ästhetischen Möglichkeiten der Photographie und des photographischen Bewegungs-bildes (Film)."

78. On Moholy-Nagy's photograms, see Heyne and Neusüss, *Moholy-Nagy*. On Moholy-Nagy's "discovery" of photograms and amateur precedents, see Molderings, "László Moholy-Nagy und die Neuerfindung des Fotogramms"; Fischer and Köhn, *Lichtbildwerkstatt Loheland*; and Chéroux, *Avant l'avant-garde*.

79. Moholy-Nagy, *von material zu architektur*, 89.

described Moholy-Nagy's abstract photograms in terms no less phantasmagoric than those articulated by Lotz, Schamoni, Doesburg, or Moholy-Nagy himself: "Moholy-Nagy unifies engineer-like precision and the bounded surface-design [*gebundene Flächenplanung*] of the image with a merry attitude toward life, which allows his compositions to waft luminous signals directly over boundless spatial expanses [*unbegrenzte Raumweiten*]."[80] For good reason, Moholy-Nagy briefly envisioned photograms as "the bridge to new optical creation."[81]

But during the twentieth century the ideology of medium specificity strangled nearly all avant-garde ambitions for phantasmagoric screens, especially Moholy-Nagy's photograms. The devolution of Moholy-Nagy's radical avant-garde proposition into boilerplate modernist orthodoxy was charted all too precisely in the four editions of his seminal text *From Material to Architecture* (1929), more famously translated as *The New Vision* (1932, 1938, 1947). Let us return to Moholy-Nagy's stated goal—the complete sublimation of pigment to light and, with it, "the ultimate simplification of the picture: the projection screen [*projektionsschirm*]"—and his wild reading of Malevich's *White on White*: "Here is to be found the interpretation of Malevich's last [*sic*] picture — the flat white surface [*fläche*]. One cannot deny that this constituted the ideal screen [*schirm*] for the light and shadow effects which, originating in the surroundings, would fall upon it. The same thing is effected as by the manual image's big brother: the film screen [*Filmleinwand*]."[82] This reading proved pivotal in Moholy-Nagy's conceptualization of his cameraless photography or photograms. The sole photogram illustrated in *From Material to Architecture*— a photogram circa 1927 comprising a luminous egglike form, overlapped by a perforated rectangular form, and set atop a series of grids, all floating within a fathomless blackness—was linked, by its caption, not only to painterly properties (like facture) but also to phantasmagoric screens (fig. 13). The caption celebrated the triumph of light over pigment in phantasmagoric terms: "This is the most successful transposition thus far of fluid light onto a projection screen [*projektionsschirm*]—in this case, the sensitive layer of the photographic paper."[83] The coupled text and image rendered almost unbearable the tensions between origin (painting), destination (phantasmagoric cinema), and actual

80. Kállai, "Moholy-Nagy," 1926, Sammlung Marzona, Bielefeld. Reproduced in facsimile in Kellein and Lampe, *Abstrakte Fotografie*, 94–95.

81. Moholy-Nagy, "Fotogramm und Grenzgebiete," 191.

82. Moholy-Nagy, *von material zu architektur*, 90. Translation adapted from Moholy-Nagy, *the new vision*, 77–78.

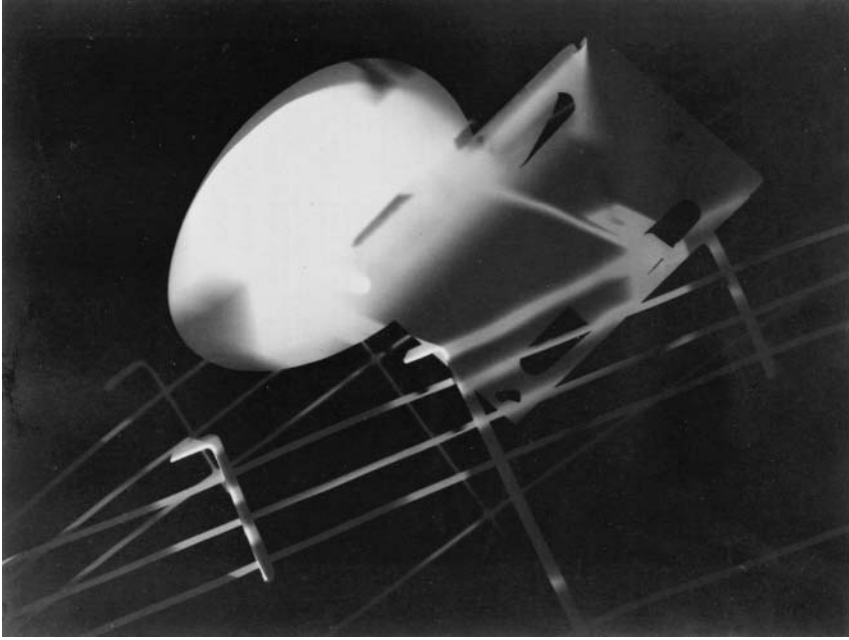83. Moholy-Nagy, *von material zu architektur*, 89, caption to fig. 66.

Figure 13. László Moholy-Nagy, untitled photogram (ca. 1927). Reproduced and erroneously dated 1925 in *von material zu architektur*, 1929.

medium (photography). Indeed, subsequent editions of the book served as release valves that reduced the conceptual pressure and, with it, the status and phantasmagoric potential of the photogram.

Already in *The New Vision: From Material to Architecture* (1932), the first English-language edition, Moholy-Nagy revised the introduction on the subordination of pigment to light. Whereas earlier Moholy-Nagy relegated constructivist airbrush paintings to a technical preliminary stage (*Vorstufe*),[84] that same dismissal now implicated cameraless photography: "This was the goal set intuitively by the constructivists, even if in practice they have reached at most a technical first stage, the airbrush technique *and the photogram*."[85] The photogram's status briefly stabilized in the 1938 edition. But in the 1947 edition of *The New Vision*, completed just before his death, Moholy-Nagy delivered the coup de grâce. What was once rapturous praise of the technique— "the most successful recording thus far . . . "—was now reduced to a staid

84. Moholy-Nagy, *von material zu architektur*, 89.
85. Moholy-Nagy, *the new vision*, 76. Emphasis added.

description: "This is the recording of light as it hit a projection screen—in this case, the sensitive layer of the photographic paper."[86]

No longer a field of forces tensed between painting, photography, and extra-cinematic film—*Fläche*, *Leinwand*, and *Schirm*—the photogram was reduced, on the one hand, to a visual effect (fine gradations of grays) available across a range of media and, on the other, to an exploration of the photographic medium in its pedagogic rather than aesthetic value. In various press releases published in conjunction with Moholy-Nagy's 1941 exhibition *How to Make a Photogram* at the Museum of Modern Art (MoMA), the artist and his collaborators not only ceded aesthetic superiority to Man Ray but also defined their aspirations in the most modest terms: "Certain metallic salts, when exposed to light, darken. . . . This is the basic principle of photography. The photogram exploits this unique characteristic of the photographic process so that it is literally possible to 'paint with light.'"[87] In 1929 the photogram was hailed as the most successful available means for immaterial expression. Barely a decade later, that path had spiraled inward so severely that it could not see beyond its own material reality. Rather than optical expression writ large, photograms embodied the rudimentary principles of photochemistry.

This is the photogram recorded for posterity by Beaumont Newhall, the founding director of MoMA's photography department. Newhall turned Moholy-Nagy's late, consolatory reading into an aesthetic program. His 1948 obituary for Moholy-Nagy culminated in a perfect, if unwitting, misreading of Moholy-Nagy's 1929 interpretation of *White on White* and the complete reversal of the place of the photogram.

> The photogram maker's problem has nothing to do with interpreting the world, but rather with the formation of abstractions. Objects are chosen for their light-modulating characteristic: their reality and significance disappear. The logical end point of the photogram is the reduction of photography to the light-recording property of silver salts. To the cameraman this is what Malevitch's *White on White* is to the painter.[88]

Rather than serve as a bridge from painting to projection, from *Fläche* to *Schirm*, Malevich's *White on White* and Moholy-Nagy's photograms plummeted into a self-reflexivity of the most reductive kind. Newhall makes a virtue of the photogram's failings. In the formulation of high modernists like Newhall

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86. Moholy-Nagy, *New Vision and Abstract of an Artist*, 39, caption to fig. 15.
87. Moholy-Nagy, *How to Make a Photogram*, 1941, Museum of Modern Art, New York. Underlined emphasis in original.
88. Newhall, "Review of Moholy's Achievement," 71.

and, at times, Moholy-Nagy himself, the photogram maker no longer interpreted the world, let alone ventured to change it.[89]

Traces of the Future
In the 1927 edition of *Painting Photography Film*, Moholy-Nagy named and defined the photogram in the following terms:

> The light is allowed to fall on to a screen [*Schirm*] (a photographic plate, light-sensitive paper) through objects with different coefficients of refraction or to be deflected from its original path by various contrivances; certain parts of the screen [*Schirm*] are shaded, etc. This process can occur with or without a camera. (In the second case, the technical procedure is the fixation of a sophisticated light and shadow play.)[90]

Two aspects of this description warrant emphasis. First, despite the section title, "Photography without a Camera: The Photogram," Moholy-Nagy initially did not define a photogram in terms of cameralessness, but rather in terms of light projected directly onto a screen, that is, in terms of a cinematic or even phantasmagoric environment. Only if the screen itself were photosensitive could the camera be eliminated. Second, the parenthetical analogy with which Moholy-Nagy elucidated the procedure—"light and shadow play" (*Licht- und Schatten-Spiels*)—alluded to proto- or postcinematic practices central to his theorization of cameraless photography (i.e., *Lichtspiele*, such as Hirschfeld-Mack's). In the 1925 edition of *Painting Photography Film*, however, Moholy-Nagy had settled on a different parenthetical analogy for photograms that described a dissimilar technical procedure and introduced an alternate constellation of allusions: "(In the second case, the technique is related to the production of blueprints of architectural plans.)"[91] Although the description was

89. In Herbert Molderings's wholly accurate paraphrase of Moholy-Nagy, the photograms "are meant to be nothing but autonomous, self-referential compositions" ("Light Years of a Life," 23). Similarly, Susan Laxton is not incorrect when she claims that Moholy-Nagy's "cameraless images [were] paradigms of modernist self-reflexivity" ("White Shadows," 335). These claims do not, however, accurately reflect Moholy-Nagy's stakes in cameraless photography at the height of his practice and theorization of the technique. We should remember, of course, Susan Sontag's devastating conclusion to her essay on the surrealist sensibility of photography: "Marx reproached philosophy for only trying to understand the world rather than trying to change it. Photographers, operating within the terms of the Surrealist sensibility, suggest the vanity of even trying to understand the world and instead propose that we collect it" ("Melancholy Objects," 82).

90. Moholy-Nagy, *Malerei Fotografie Film*, 30. Adapted from Moholy-Nagy, *Painting Photography Film*.

91. Moholy-Nagy, *Malerei Photographie Film*, 25.

technical—architectural blueprints were then the best-known form of camera-less photography—the allusion was pregnant with meaning. Photograms were blueprints for as-yet-unrealized light-spaces, plans for unbuilt architectures of light. Walter Benjamin inflected Moholy-Nagy's thought (if not his precise terminology) in a review of another "marginal case" of architectural drawings: "As regards the images themselves, one cannot say that they *reproduce* architecture. They *produce* it in the first place, a production that less often benefits the reality of architectural planning than it does dreams."[92] At once cinematic trace and architectural blueprint, photograms staked out a liminal position at the end of autonomous images and the beginning of light architectures.

As Benjamin noted, "It has rightly been said that all great works of literature establish a genre or dissolve one."[93] Photograms do not conform to the great works theory of art. Their uncomfortable status as last images and first light architectures is more of a piece with minor literatures and histories.[94] Fluent in the languages of painting, photography, and film, avant-garde cameraless photographs never shook their universally foreign accent. In this sense they indeed constituted a consummate offshoot on the multibranched tree of twentieth-century art.[95] At the same time, the energies invested in them—above all, by Moholy-Nagy—were never directed at a self-contained practice. The escape from this contradiction returns us to Moholy-Nagy's first articulate theoretical statement, which sustained his thought and practice throughout the interwar period. In 1922, before he experimented in photography, let alone film, Moholy-Nagy theorized technological media in terms of production and reproduction.[96] Media like the gramophone, photography, film (and its screen) had thus far merely reproduced familiar relationships. To carry out art's mission to develop human sensory faculties, reproductive media had to be repurposed to produce new, unfamiliar relationships. Moholy-Nagy encouraged new, productive forms of musical composition through the direct manipulation of the gramophone record grooves and, later, the optical

92. Benjamin, "Rigorous Study of Art," 444; Benjamin, *Gesammelte Schriften*, 3:368. Moholy-Nagy eventually likened his photograms to *Proun* works by El Lissitzky, which the latter, in turn, famously described as "transfer stations between painting and architecture" (Lissitzky and Arp, *Die Kunstismen*, 9).

93. Benjamin, "On the Image of Proust," 237.

94. See Joseph, *Beyond the Dream Syndicate*, 11–58.

95. Cf. Molderings, "Lichtjahre eines Lebens," 17.

96. Moholy-Nagy, "Produktion-Reproduktion"; Moholy-Nagy, "Production-Reproduction." Moholy-Nagy's essay was at once pathbreaking and attuned to emerging trends. A comparable vocabulary was soon adopted widely, e.g., Balázs, "Produktive und reproduktive Filmkunst." For alternate readings of this essay, see Botar, *Technical Detours*, 163–69; Jennings, "Production, Reproduction"; and Kaplan, *László Moholy-Nagy*, 31–62.

soundtrack of film.[97] Similarly, film would have to free itself from the repro-
duction of dramatic action in favor of pure motion. Moholy-Nagy here cited
the work of Walter Ruttmann and Thomas Wilfred's *Clavilux*,[98] and, with
greater approval, the (unrealized) works of Eggeling and Richter.[99] Neither
gramophones nor films, however, found immediate outlets in Moholy-Nagy's
production. Instead, his paradigmatic practice lay in photography freed from
the camera (*Apparat*) in its reproductive capacity and used instead to capture
light phenomena—or *Lichtspielmomente*—produced through the manipulation
of mirrors, lenses, and so forth.[100] Moholy-Nagy's neologism, *Lichtspielmo-
mente*, seized on the ambiguity of these images: *Lichtspiel*, literally "light-
play," was a recently outmoded name for *film* adopted by the avant-garde;
moment, an English cognate, carried connotations of snapshots, as in *Moment-
aufnahme*. Productive photography demanded traces of the future, that is, snap-
shots or stills from never-to-be-realized abstract films.[101] Photograms were the
offspring of this mixed-media union.

Nine months later, Moholy-Nagy expanded these ideas alongside the first
publication of his cameraless photographs. "Instead of having a plate which is
sensitive to light react mechanically to its environment through the reflection or
absorption of light," he explained:

> I have attempted to *control* its actions by means of lenses and mirrors, by light
> passed through fluids like water, oil, acids, crystal, metal, glass, tissue, etc. This
> means that the filtered, reflected, or refracted light is directed upon a screen and

97. See also Moholy-Nagy, "Zum sprechenden Film"; and Moholy-Nagy, "Neue Filmexperi-
mente," 335. For an overview and analysis of synthetic sound experiments in the 1920s, see Levin,
"Tones from out of Nowhere."

98. On Ruttmann, see Cowan, *Walter Ruttmann and the Cinema of Multiplicity.* Wilfred's *Clavilux*
was a type of color organ, "but," as Moholy-Nagy elaborates reproachfully in a footnote, "the concern
here is with light projection on a surface, not in space" ("Production-Reproduction," 81). Wilfred's
Clavilux has recently regained some of its interwar renown as the divine light in Terrence Malick's
Tree of Life (2011). See Orgeman, *Lumia.*

99. Symptomatically, Moholy-Nagy favored the cinematic imaginary. Unlike Ruttmann and
Wilfred, Eggeling and Richter had not yet shown any of their films as projected, motion pictures.

100. Moholy-Nagy, "Produktion-Reproduktion," 100.

101. Crucially, Moholy-Nagy eventually did make his own *Lichtspiel* film: *Lichtspiel: Schwarz,
Weiss, Grau* (1932). I address the *Lichtspiel* film in Elcott, "Rooms of Our Time," esp. 40. On the *Licht-
spiel* film specifically and Moholy-Nagy's film output more broadly, see Sahli, *Filmische Sinneserwei-
terung*; Goergen, "Light Play and Social Reportage"; Goergen, "Films. Projects. Proposals."; and
Elcott, "László Moholy-Nagy." Were it not so well treated in the extant scholarship, Moholy-Nagy's
Lichtspiel film would have played a significant role in this essay; nonetheless, an informed reader should
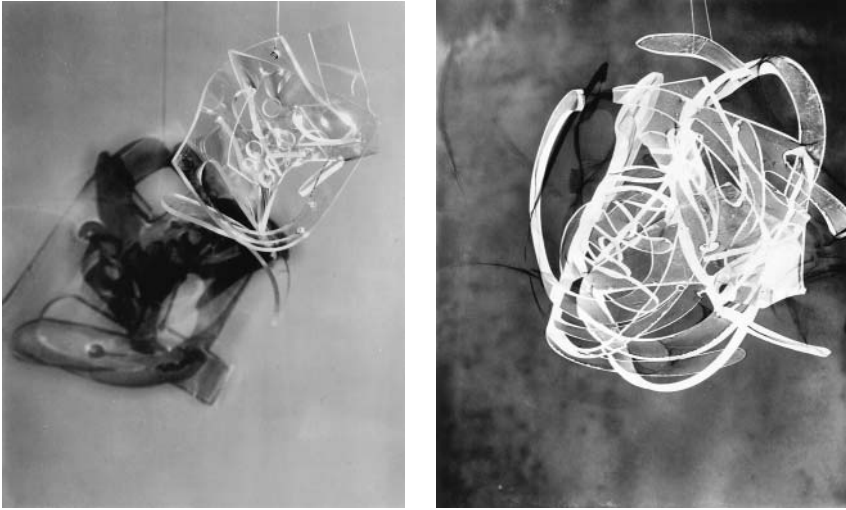be able to connect the dots.

Figure 14. *(left)* László Moholy-Nagy, untitled photograph (Plexiglas sculpture with shadow) (ca. 1943). *(right)* László Moholy-Nagy, untitled photogram (from Plexiglas sculpture and shadows) (1943).

> then photographed. Or again, the light-effect can be thrown directly on the sensitive plate itself, instead of upon a screen. (Photography without apparatus.)[102]

In their earliest articulations, Moholy-Nagy's photograms could be produced with or without a camera. Their essence lay not in the exclusion of a camera (apparatus) but, rather, in the reconfiguration of their environment (*dispositif*). Instead of having light mechanically reproduce its environment, Moholy-Nagy sought to produce a new, phantasmagoric environment. Man Ray, a critic once remarked, "invents a new world and photographs it to prove it exists."[103] The words apply even more forcefully to Moholy-Nagy, for whom a productive photograph was a reproduction of the world remade in its own image.

The Plexiglas sculptures Moholy-Nagy fabricated toward the end of his life adhered to the same logic. They possess the rare capacity to be photographed compellingly, if not quite identically, with and without a camera—as evidenced by Moholy-Nagy's own photographs and photograms of the sculptures (fig. 14).[104] Sculptures made under the sign of photograms produce

102. Moholy-Nagy, "Light—a Medium of Plastic Expression," 284. "Produktion-Reproduktion" was published in July 1922. "Light—a Medium of Plastic Expression" was published nine months later, in March 1923.

103. Ribemont-Dessaignes, "Dada Painting or the Oil-Eye," 11.

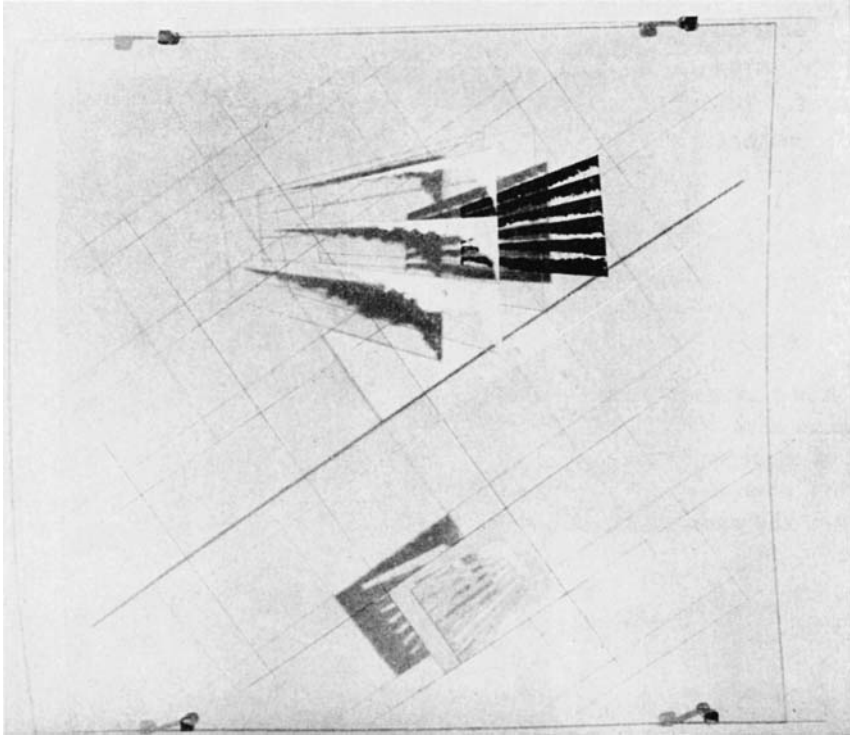104. See Heyne and Neusüss, *Moholy-Nagy*, 293–97.

Figure 15. László Moholy-Nagy, *Transparent Rho 50a (Construction of Rhodoid)* (1936). Reproduced in *The New Vision* (1938).

a world that dissolves the difference between camera-based and camera-less photography. But even more fundamentally, they mark the final iteration of Moholy-Nagy's aspirations for phantasmagoric scrims. In the 1938 edition of *The New Vision*, Moholy-Nagy made but one substantive change to the section "The Final Simplification of the Pictures: The Projection Screen." Once again, he rehearsed his interpretation of Malevich's "last picture" as "the ideal screen." Only here he added a footnote and illustration that leave no doubt as to the phantasmagoric impulse behind his plastic constructions:

> The new plastics allow a new type of visual expression to develop. Glasslike sheets, pliable, can be curved convex and concave. They can be perforated so that light and pigment will be fused into a new unity. Artificial light sources

(spot lights, needle lamps) can continuously change the composition. This kind of picture is most probably the passage between easel painting and light display, a new branch of moving pictures.[105]

Moholy-Nagy's use of italics indicated that the text serves as an extended caption to the illustrated image: *Transparent Rho 50a (Construction of Rhodoid)* (1936) (fig. 15). The caption once again triangulates the screen between easel painting (*Fläche*), abstract cinema (*Filmleinwand*), and the unnamed (and unnamable) phantasmagoric *Schirm*. Yet the name of the work directly recalls nineteenth-century descriptions of the phantasmagoric scrims—*transparent*—just as its basic qualities and effects are unavoidably phantasmagoric. As Joyce Tsai recounts in an evocative and unerring description of a related work: "From certain perspectives and lighting conditions, the transparent Plexiglas support becomes nearly invisible, and the colorful shapes, suspended in midair, become animated as if in a Technicolor space-age production."[106] Moholy-Nagy would not live much longer in the age of Technicolor productions, which did little to reconfigure traditional cinematic spectatorial relations and showed no interest in his Plexiglas creations. But it is these and, even more so, his black-and-white photograms that were at once blueprints for and traces of a phantasmagoric future that he ultimately refused to inhabit. Moholy-Nagy was no prophet of future screens. Instead, his art and theory remain among the most nuanced articulations *and* residues of the paper-thin distinctions between *Fläche*, *Leinwand*, and *Schirm* at the height and end of the first screen age.

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105. Moholy-Nagy, *The New Vision*, 86.
106. Tsai, *László Moholy-Nagy*, 144.

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