THE UNIVERSITY OF CHICAGO

HOW TO PHOTOGRAPH THE AIR: PHOTOGRAPHY, CINEMA, AND THE PROBLEM OF ATMOSPHERE IN GERMAN MODERNISM, 1893-1933

A DISSERTATION SUBMITTED TO

THE FACULTY OF THE DIVISION OF THE HUMANITIES

IN CANDIDACY FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

DEPARTMENT OF CINEMA AND MEDIA STUDIES

AND

DEPARTMENT OF ART HISTORY

BY

KATERINA KOROLA

CHICAGO, ILLINOIS

AUGUST 2021

What interests us is without reason or motive, like an overflowing cloud that spits onto a path.

-- Tristan Tzara

TABLE OF CONTENTS

LIST OF FIGURES

ACKNOWLEDGEMENTS

This dissertation would not have been possible without the encouragement, enthusiasm, and support of my committee co-chairs, Tom Gunning and Christine Mehring, whose faith in my work never wavered. Words cannot express how grateful I am to both of them for bearing with me as my dissertation developed from a disparate collection of pictures and descriptions of atmospheric phenomena into the manuscript it is today, which, I hope, has succeeded in demonstrating just how concrete matters of air can be. Tom has been a mentor since my first days as a graduate student. From him, I not only learned how to love the cinema, but, more importantly, how to engage with images on their own terms, to be attentive to their puzzles, and to grapple with their contradictions as the very core of their meaning. His boundless curiosity and enthusiasm have been a constant source of inspiration, and I only hope that a fraction of it has made its way into this dissertation. From Christine, who welcomed me into the Department of Art History, I learned how to think and research like an art historian. I'll always be grateful for the exciting conversations we had as we looked at images together in her office, pondered questions of etymology with the Grimm Wörterbuch in hand, or debated the correspondences between critical tropes and material techniques. Christine has been an unflagging advocate and interlocutor since this dissertation began, and, more importantly still, a role model, whose boundless energy and intellectual passion I aspire to carry forward into the next stage of my career.

I also want to express my gratitude to my committee members Jennifer Wild and Dan Morgan for the support, insights, and challenges they brought to this project. As both a teacher and an advisor, Jennifer's openness to sharing her own process helped me understand the mechanics of research, and her ability to dwell with and tease out the suggestive power of certain figures and motifs has been an inspiration from the beginning. Conversations with Dan Morgan, who brough a sharp analytic eye to countless partial drafts, always left me feeling capable and ready to overcome whatever challenges lay head. Thank you all of you.

During my time at the University of Chicago I have also profited enormously from intellectual exchanges with several brilliant individuals at various stages of the program. I'd like to particularly thank Katherine Taylor, Marty Ward, and Salomé Skvirsky for being such generous interlocutors during my exams in Art History and Cinema and Media Studies, always

pushing me to greater precision. I'm grateful to Liz Siegel at the Art Institute of Chicago for acting as a mentor during a summer internship at the photography department, an experience which was instrumental in bringing this project 'down to earth,' as it were. Thank you, as well, to Niall Atkinson, Dominique Bluher, Allyson Field, Michael Fisch, Jim Lastra, Richard Neer, David Rodowick, and Megan Sullivan for your support at various stages of my graduate studies, to Ingrid Christian for taking the time to chat with me about the challenges of writing a dissertation about the air as I was formulating my proposal, and to Joel Snyder for his willingness to share his thoughts on questions of photographic technique.

I'm grateful to my colleagues in German cinema—Nicholas Baer, Emily Dreyfus, Katharina Loew, Tyler Schroeder, and Philipp Stiasny—for their generosity in sharing research tips, chatting about films, and debates in the field. I've also had the privilege of enjoying the camaraderie of current and former graduate students at the University of Chicago, including Sean Batton, Ethan Blass, Dave Burnham, Chris Carloy, Will Carroll, Sasha Crawford-Holland, Matt Hauske, Matt Hubbell, Pedro Doreste, Luke Fidler, Hanne Graversen, Tien-Tien Jong, Gary Kafer, Ritika Kasuhik, Max Koss, Mikki Kressbach, Nora Lampert, Nancy Lin, Cooper Long, Jesse Lockhard, Sophie Lynch, Steven Maye, Saadia Mirza, Nicole Morse, Solveig Nelson, James Rosenow, Amy Skjerseth, Aurore Spiers, Pao-Chen Tang, Zsofi Valyi-Nagy, Artemis Willis, and Alex Zhang, whose intellect, humour, and warmth over the years kept me going and made everything worthwhile. My gratitude also goes to my cohort of fellows at the Berlin Program, especially fellow art historians Emi Finkelstein and Emine Seda Kayim, for being inspired interlocutors over the past year. Finally, I would also like to thank the wonderful faculty with whom I had the privilege of studying while an undergraduate at Concordia University, especially Luca Caminati, Catherine MacKenzie, Alice Jim, Thomas Waugh, Anthony Kinik, and Marc Steinberg, whose teaching and mentorship not only inspired me to pursue a PhD, but also made such a thing seem possible and worthwhile.

The research that went into the dissertation was conducted with the support of numerous grants and individuals, including the FRQSC bourse de maîtrise en recherche, the SSHRC Doctoral Fellowship, the Division of the Humanities Dissertation Research Grant, the Council for Advanced Studies, and the Hannah Holborn Gray Dissertation Completion Fellowship. I would also like to single out for thanks Karin Goihl and the Berlin Program for Advanced German and European Studies at the Freie Universität Berlin for supporting this project with a

doctoral fellowship that allowed me to spend the past year close to the relevant archives and collections in Berlin. The staff at the Getty Research Institute, the Cinemathèque française, Centre national du cinéma et de l'image animée, Deutsche Kinemathek, Museum für Fotografie, Akademie der Künste, Kunstbibliothek and Staatsbibliothek in Berlin, the Filmarchiv of the Bundesarchiv, the Art Institute of Chicago, and, of course, Nancy Spiegel at the University of Chicago's Regenstein Library were instrumental to completing this research. Special gratitude goes to Julia Riedel at the Deutsche Kinemathek, Ralf Peters at the Photothek of the Zentralinstitut für Kunstgeschichte, and Simone Förster and Anna Volz of the Ann und Jürgen Wilde Stiftung for their generous assistance helping me access materials during the long months of the winter lockdown. Finally, I'd like to thank Bridget Madden at the University of Chicago's Visual Resource Center for being an invaluable aid in obtaining high quality images for both teaching and research purposes, and Alyssa Padilla, Traci Verleyen, and Laurel Darling for all their help with administrative matters large and small over the years.

Early versions of this dissertation's chapters profited enormously from discussion at the Mass Culture Workshop, the Berlin Program Colloquium, and the Freie Universität's Modern Art History Colloquium lead by Eric de Bruyn. Thank you especially to Max Boersema and Jan Hua-Henning for your generous and generative responses to drafts of the first chapter, as well as to Max Koss, for engaging with early versions of the same and challenging me whenever I was on shaky ground. Thank you to Katharina Loew for being an important mentor as I first began working on Weimar cinema's smoke effects in the context of Tom Gunning's seminar on special effects in Spring 2016, to Amanda Shubert for being a partner in all things Faustian, and to the Domitor Society for recognizing an early version of this second chapter with a special commendation. Finally, the sincerest thanks also to James Leo Cahill and Brian Jacobson for giving me the opportunity share a version of this dissertation's final chapter at the University of Toronto the Strange Weather Symposium in February 2020 and continuing to engage with my work as editors over the past year.

The actual writing of this dissertation would not have been possible without the help of multiple writing groups that kept me going over a long year of isolation. Amanda Shubert, Allyson Field, Kate Nesbit, and Arianna Gass helped me start each week with a concrete plan and celebrate small accomplishments. Pomodoro sessions with Sean Batton, Matt Hubbell, Ritika Kasuhik, and Pedro Doreste got me through numerous fits of writer's block and writing

exchanges with James Rosenow and Tyler Schroeder both brought important insights and kept motivation up. My quarantine movie club helped me stay sane with a regular dose of cinephilia and regular banter with Pao-Chen Tang and Braden Scott was a real lifeline. Finally, I want to thank Matt for being there through the highs and lows of it all, and my mom and brothers for believing in me. I wouldn't have been able to do it without you.

INTRODUCTION

HOW TO PHOTOGRAPH THE AIR

Figure 0.1: Etienne-Jules Marey, four instantaneous photographs showing the movement and velocity of air obstructed by various objects, 1899-1901, modern enlargements of the original gelatin-bromide glass negatives. Paris: Cinémathèque française.

In 1899, the French physiologist Etienne-Jules Marey, pioneer of the graphic method and inventor of chronophotography, set to work on a device designed to photograph the air. By Marey's own account, the goal of his apparatus was, once again, to "render visible the phenomena that escape vision and fix them in very clean images," thereby furnishing the scientific community with a wealth of visual data that could be exploited in any number of practical applications, from aviation to ventilation.[1] For Marey, then, to photograph the air

[1] Etienne-Jules Marey, "Les mouvements de l'air étudié par la chronophotographie," *La Nature* (7 Sept. 1901), 252. At the end of his article describing the composition of the apparatus, his method, and how to interpret the images thus obtained, Marey noted possible applications in aviation, the propulsion of fluids, ventilation, and "everything that depends on the movement of air." As Laurent Mannoni has suggested, however, Marey's investment in the photographing the air would seem to have been rooted more in the challenge itself than in any one concrete application, a task that he happily confided to the next generation of researchers. See Laurent Mannoni, "Marey aéronaute: De la méthode graphique à la soufflerie aérodynamique," *Mouvements de l'air: Etienne-Jules Marey, photographe des fluides* (Paris: Gallimard, 2004), 52-53.

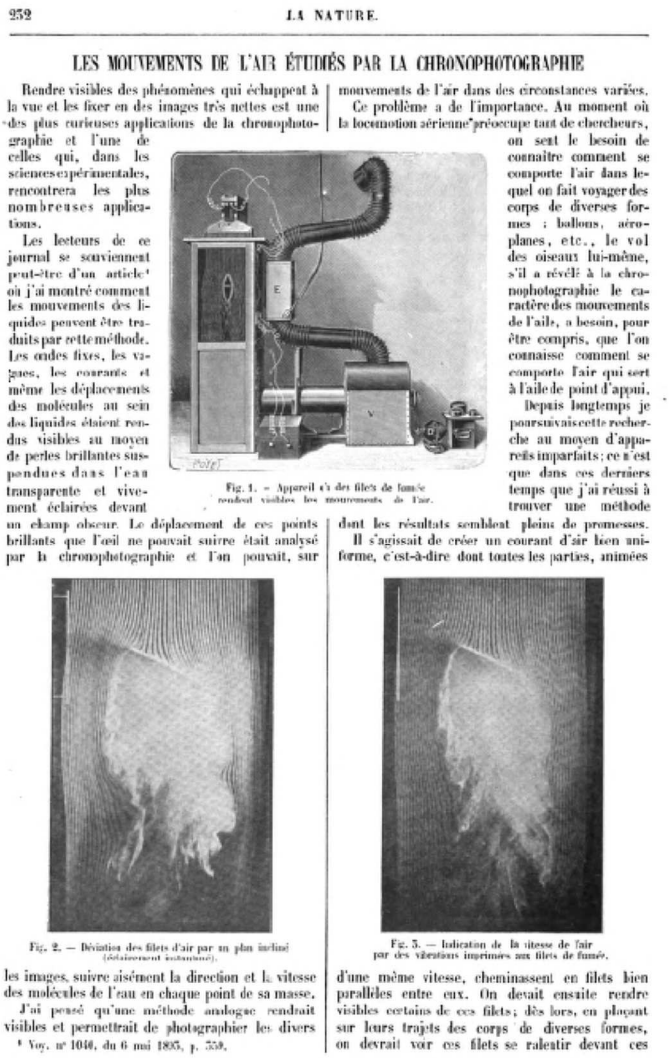
represented something like the culmination of the project that has occupied his entire career. Having already rendered visible the circulation of blood within the body and the motions of a bird's flight, too rapid for the human eye, the challenge of fixing the movements of aerial currants on the surface of the photographic plate presented the opportunity to conquer one last domain of the invisible in the name of scientific knowledge. Marey would devote the next three years, the last of his professional life, to this task. Finally, in 1901, the physiologist was sufficiently satisfied to present the public with the results of his research, which took the form of a series of instantaneous photographs in which the movements of the air—not only its trajectory, but also its velocity—could be traced in the soft, sinuous undulations of a thin white lines against a velvety black ground (Fig. 0.1).

When looking at these photographs, it is difficult not to be struck by their strange, almost hypnotic beauty, to find oneself caught up in the graceful movements of white smoke across the image plane, to be entranced by the subtle range of greys that emerge as its delicate filaments transform into swirling volutes. But despite their evocative appearance, so well-suited to the visual culture of the fin-de-siècle, these photographs are nonetheless marked by the same regime of diagrammatic rationality that long characterized Marey's graphic and chronophotographic production. Indeed, what is perhaps most striking about these photographs is their unique combination of sensuality and precision—a quality most visible in the last image of the sequence, where the gentle oscillation of the smoke's train, resembling a moiré pattern, in fact provides a metric by which the air's velocity can be measured. Georges Didi-Huberman has noted an almost troubling sensation that arises with the realization of just how seamlessly this sensuous dance of smoke—with its neat white lines, curving contours, and abstract black

ground—aligns with the formal hallmarks of the graphic method.[2] Indeed, what is perhaps most unsettling—but also, most *exhilarating*—about this convergence is the apparent ease with the fundamentally nebulous, ephemeral, and poetic phenomena of the air could be translated into the precision language of graphic representation.

Of course, to produce these images, Marey first had to devise a way to control, regulate, and render photographic not only the air, but also the smoke in which its movements are traced (Fig. 0.2). The core of his apparatus consisted of a small glass case, lined at the back with black velvet, and on the left with a reflective white surface, designed to maximize and distribute the illumination provided by a magnesium lamp positioned at the chamber's righthand side.[3] This chamber was then linked to an electric ventilator, which would then propel the air into the chamber through a fine silk gauze, which purified the air in order to render its movements more regular. To make this purified air visible to both the eye and the photographic plate, Marey made use of a smoke obtained by burning tinder fungus and cotton in a small furnace. A system of fifty-seven slender pipes, positioned just below the filtering gauze, conducted this smoke into the glass case, at which point it would be forced downwards by the ventilated air, recovering its natural, upwards motion only in the region of empty space left by the various objects positioned in the chamber to interrupt the flow of the air.[4] Thus disciplined, the smoke effectively became a novel type of graphic instrument. More than simply serving as the medium through which the air's movements could be visualized, it became itself a graphic line, neat and precise as those

[2] Georges Didi-Huberman, "La danse de tout chose," *Mouvements de l'air: Etienne-Jules Marey, photographe des fluides* (Paris: Gallimard, 2004), 191.
[3] This and the following technical specifications come from Etienne-Jules Marey, "La mouvement de l'air étudié par la chronophotographie," *Journal de physique, théorique et appliquée* (March 1902), 103. This article represents the text of a presentation that Marey delivered to the Société française de physique on January 17th, 1902.
[4] Between 1899 and 1901, Marey gradually increased the number of pipes that would introduce this smoke, before settling on the fourth and final version with fifty-seven pipes in 1901, which was used to create the images included here. These pipes, moreover, were subjected to a lateral oscillation every tenth of a second, producing the moiré pattern discussed above, which made possible the calculation of the air's speed.



252 LA NATURE.

LES MOUVEMENTS DE L'AIR ÉTUDIÉS PAR LA CHRONOPHOTOGRAPHIE

Rendre visibles des phénomènes qui échappent à la vue et les fixer en des images très nettes est une des plus curieuses applications de la chronophotographie et l'une de celles qui, dans les sciences expérimentales, rencontrera les plus nombreuses applications.

Les lecteurs de ce journal se souviennent peut-être d'un article[1] où j'ai montré comment les mouvements des liquides peuvent être traduits par cette méthode. Les ondes fixes, les vagues, les courants et même les déplacements des molécules au sein des liquides étaient rendus visibles au moyen de perles brillantes suspendues dans l'eau transparente et vivement éclairées devant un champ obscur. Le déplacement de ces points brillants que l'œil ne pouvait suivre était analysé par la chronophotographie et l'on pouvait, sur les images, suivre aisément la direction et la vitesse des molécules de l'eau en chaque point de sa masse.

J'ai pensé qu'une méthode analogue rendrait visibles et permettrait de photographier les divers mouvements de l'air dans des circonstances variées.

Ce problème a de l'importance. Au moment où la locomotion aérienne préoccupe tant de chercheurs, on sent le besoin de connaître comment se comporte l'air dans lequel on fait voyager des corps de diverses formes : ballons, aéroplanes, etc., le vol des oiseaux lui-même, s'il a révélé à la chronophotographie le caractère des mouvements de l'aile, a besoin, pour être compris, que l'on connaisse comment se comporte l'air qui sert à l'aile de point d'appui.

Depuis longtemps je poursuivais cette recherche au moyen d'appareils imparfaits; ce n'est que dans ces derniers temps que j'ai réussi à trouver une méthode dont les résultats semblent pleins de promesses.

Il s'agissait de créer un courant d'air bien uniforme, c'est-à-dire dont toutes les parties, animées d'une même vitesse, cheminassent en filets bien parallèles entre eux. On devait ensuite rendre visibles certains de ces filets; dès lors, en plaçant sur leurs trajets des corps de diverses formes, on devrait voir ces filets se raréfier devant ces

Fig. 1. — Appareil où des filets de fumée rendent visibles les mouvements de l'air.

Fig. 2. — Déviation des filets d'air par un plan incliné (éclairement instantané).

Fig. 3. — Indication de la vitesse de l'air par des vibrations imprimées aux filets de fumée.

[1] Voy. n° 1046, du 6 mai 1895, p. 359.

Figure 0.2: Illustration of Marey's apparatus for photographing the movements of air, as published in *La Nature* (September 7, 1901).

inscribed by the stylus of the sphygmograph.

Yet even as Marey took recourse to smoke as a solution to the problem of visualizing the air, the photographers, filmmakers, and critics whose work forms the core of this dissertation found themselves confronting the novel problem of an air that had become all too visible. By the end of the nineteenth century, the steadily worsening air quality of urban centers across Europe had become difficult to ignore, manifesting itself in an increased frequency and density of fog formations, regular deposits of dust and other corrosive particles on surfaces of all kinds, and a marked increase of respiratory ailments, especially amongst those who worked and resided in the

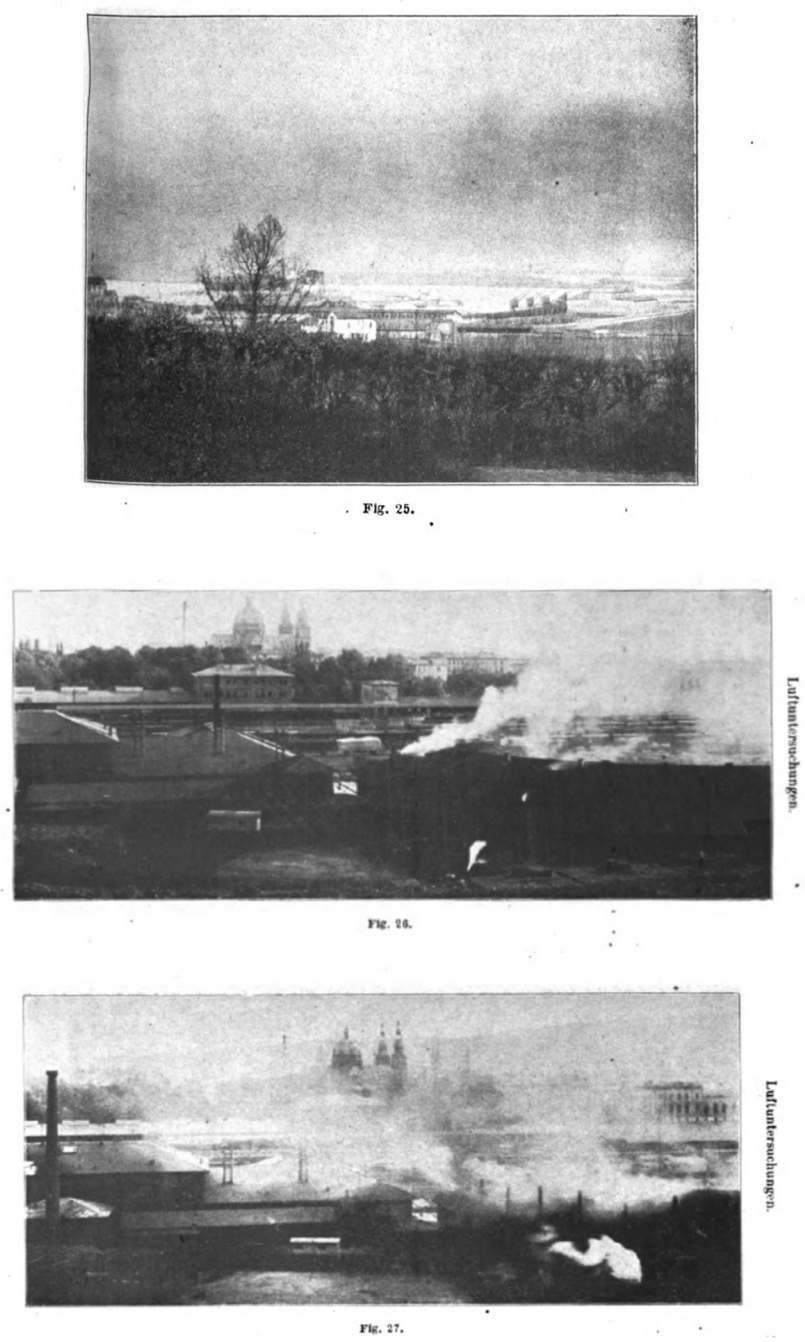


Figure 0.3: Photographic documentation of the 'smoke plague' (Rauchplage) afflicting German cities, reproduced in Albert Reich's *Leitfaden für die Rauch- und Rußfrage* (1917). The photographs themselves were produced circa 1909.

most heavily polluted regions. Just how visible the air had become is evident in the photographs published in early twentieth-century hygiene journals, which document the accumulation and spread of smoke and fog across vast swathes of space (Fig. 0.3). Often taking the form of panoramas, photographed from a distant location that allowed the urban atmosphere to be pictured from the outside, these murky images present the smoke of industrial modernity as a

diffuse, roaming mass—not a line, but a stain, darkening the sky and marring the horizon. Looking at these images, it is not difficult to understand why even public health officials would feel compelled to describe the thick air of the city as not only a threat to public health, but also an aesthetic blight.[5]

In stark contrast to the formal rigour of Marey's photographs, these images offer a compelling reminder that, once outside the highly regulated environment of the glass case, the phenomenon of smoke proved highly resistant to both physical manipulation and established aesthetic conventions. With this in mind, it becomes possible to reframe the question—'How to photograph the air?'—as one in which environmental and aesthetic problems became deeply entwined, at times even indistinguishable. The problem of how to photograph the air, then, becomes less a matter of making visible the invisible than one of grappling with an air whose overabundant visibility presented, as we shall see, a potent challenge both the categories of aesthetic discourse and the materiality of photosensitive media.

This challenge—and the strategies that photographers and filmmakers devised in response to it—stands at the heart of this dissertation. Focusing on the work of photographers, filmmakers, and critics active in Wilhelmine and Weimar Germany, my project examines the emergence of the atmospheric as a locus of aesthetic debate and technical invention that would leave a lasting mark on the development of modern media aesthetics. Guiding this investigation are a series of questions that aim to reframe the problem of how to photograph the air as a pictorial problem with both aesthetic and material dimensions. How, it asks, did the atmosphere of industrial modernity seep into the aesthetic debates of the early twentieth century? How did the elements of air pollution conform to, but also deform, aesthetic categories inherited from

[5] Albert Reich, *Leitfaden für die Rauch- und Rußfrage* (Munich, Berlin: R. Oldenbourg, 1917), 101-103.

nineteenth-century art criticism? What strategies did photographers and filmmakers develop to negotiate with the material realities of smoke, dust, and fog whether to incorporate these phenomena into new aesthetic frameworks or to banish them entirely? More importantly still, how did photographic and filmic aesthetics take an active role in regulating the relationship between the humans and a compromised environment, occasionally even acquiring the character of environmental interventions? In posing these questions, my project aims to offer an account of the way in which the atmosphere of industrial modernity inflected the development of modern media aesthetics. Even more importantly, it aims to account for the role that these media performed in the construction of new relationships with a compromised environment, in which, to invert Walter Benjamin's famous phrase, *not even* the clouds remained unchanged.

The Problem of Atmosphere in German Modernism

Though the problem of air pollution was by no means unique to early twentieth-century Germany, the German context offers particularly fertile ground upon which to explore the intersection of modern media aesthetics and the environmental problems of industrial modernity. The exemplarity of the German context is due in the first place to the unique character of its industrialization. As countless historians have noted, because of the dramatic pace of industrial and urban growth that followed the unification in 1871, the transformations engendered by modernity were felt nowhere so acutely as in Germany's urban centers. Coal production, for instance, increased by 56% from 1872 to 1882 and would increase again to 138% its pre-unification levels by 1895.[6] Problems of air quality abounded in cities across Germany, where the smoke of countless domestic and industrial chimneys hung heavy in the air.

[6] Albert Reich, *Leitfaden für die Rauch- und Rußfrage* (Munich and Berlin: R. Oldenbourg, 1917), 13. These numbers come from a survey conducted by the Kaiserliches Statistisches Amt in 1910.

The rapid pace and scale of these transformations is aptly captured in the art critic Karl Scheffler's 1927 memoir. Reflecting on the changes that his birth city of Hamburg had undergone only over the course of his lifetime, Scheffler described the paving over of old streets with asphalt, the transformation of farmlands into bustling industrial quarters, and, most relevant for the present discussion, the appearance of a dense, dark haze that seemed to encompass the entire city. As one approached the city, Scheffler wrote, one began to see everything "as if through a veil, for the smoke of a thousand chimneys spread over everything like a drifting mist and ran together with the atmosphere of the grey wet day."[7] Such comments are not rare amongst early twentieth-century descriptions of urban and industrial centers such as Hamburg, Berlin, and the Ruhr Valley (all of which served as key sites of aesthetic production for the figures discussed in this dissertation), whose steadily worsening air quality served as a frequent locus of debate not only amongst architects and public health officials, but also amongst cultural commentators, the polemicists of the Lebensreform movement, and civilian societies for urban beautification and smoke abatement. Mediating vision within the city, plainly visible to those approaching it from without, these dark clouds of Germany's urban centers, dubbed the 'smoke plague' (*Rauchplage*) in the contemporary press, became, for many, one of the single most recognizable signs of modernity.

But however dramatic, these dark clouds alone do account for the role that atmospheric metaphors and phenomena would come to play in the realm of aesthetics, which brings me to the second reason for the German context's exemplarity. As will be discussed at greater length in the first chapter of this dissertation, the atmospheric had long constituted an important topos of art criticism in the German aesthetic tradition. The concept of Stimmung—which might be

[7] Karl Scheffler, *Der junge Tobias: Eine Jugend und ihre Unwelt* (Munich: Heinrich Ellermann, 1962), 21.

translated as mood, atmosphere, or attunement—had come to describe, over the course of the nineteenth century, the primary means by which a work of art or landscape might communicate with the beholder. For this reason, Stimmung soon became an all but necessary criteria for a work of art to gain recognition as such, especially when it came to genres and modes of production at the margins of so-called 'fine art,' such as landscape painting, and later, photography and film. Interpreted as an overarching affective tonality, at times even as a 'soul,' Stimmung came, by the end of the century, to denote the nebulous quality that transformed an accumulation of details into an expressive unity.

At the same time, however, the concept of Stimmung became more and more closely linked to concrete atmospheric phenomena to which artists turned to make it visible. By 1897, this association had become so well-established that the photographer Adolf Miethe could even write: "One uses the concept of Stimmung in two different senses. On the one hand, one speaks, for example, of a Stimmung that is serious, heroic, bright, etcetera. On the other, one speaks of morning, evening, dusk, or winter Stimmung."[8] The solidification of Stimmung into the stuff of weather, and the variety of techniques that pictorial photographers devised to render its density on the surface of the photographic print, will be explored in greater detail in this dissertation's first chapter. For now, it suffices to say that the centrality of Stimmung to turn-of-the-century artistic discourse meant that photographers, filmmakers, and critics met the strange clouds of modernity with an already heightened attention to atmospheric phenomena.

This concretization of Stimmung moreover rendered the category highly permeable to the atmospheric by-products of industry. Scheffler's description of the smoke of the chimneys bleeding into the wet atmosphere of a grey day was not only expressive of an increasing

[8] Adolf Miethe, *Kunstlerische Landschaftsphotographie* (Halle: Wihelm Knapp, 1921), 72-75. Unsurprisingly viewed the latter type of Stimmung as more appropriate to photography.

uncertainty as to where the weather ended and pollution began, but also corresponded to the chemical dynamics of pollution, which, as turn of the century scientists had already observed, had a tendency to bind with the humidity in the air to produce standing fogs that could drift well beyond the city limits. Prefiguring the contemporary concept of the Anthropocene, meteorologists and hygiene engineers studying the 'smoke plague' afflicting German cities used a host of instruments and tables to demonstrate that the smoke produced by human industry was, in fact, already beginning to exert a marked force on climactic patterns.[9]

One might well guess that this unnatural weather posed something of a problem for aesthetic discourse in which the atmospheric occupied such a singular position, however photographic production and criticism from the period reveals a wide range of reactions. On the one hand, the expanding body of research on pollution merged seamlessly with more antiquated notions of 'bad air,' which remained a leitmotif in conservative critiques of the metropolis, especially in the wake of the cholera epidemic of 1892. A growing body of medical literature moreover linked the urban atmosphere to respiratory ailments, further contributing to a general anxiety around the dense air of the metropolis. It is thus hardly surprising to find that many pictorial photographers, who by and large belonged to a class that, as Richard Evans notes, had the good fortune of escaping the city for summer homes, preferred to simply avoid the troubling proximity of pictorialism's atmospheric aesthetic to the visual environment of the early twentieth-century city, restricting themselves to a largely pastoral repertoire that, in theory if not in fact, obviated the confrontation.[10]

---

[9] Gesundheits-Ingenieur; Albrecht Frübose, *Die Bedeutung der verunreinigten Luft für die menschliche Gesundheit, mit besonderer Berücksichtigung der Großstädte und der Industriebezirke* (Berlin: Richard Schoetz, 1927), 51-52. Frübose writes: "All in all, there is no doubt about the fact that the increase in smoke and soot not only results in the air being polluted by large amounts of harmful substances, but also results in a significant change in climactic conditions."

[10] Richard Evans, *Death in Hamburg: Society and Politics in the Cholera Years* (New York: Penguin, 2005), 122. The pastoralism of pictorial photography has been widely commented upon, most interestingly by Ulrich Keller,

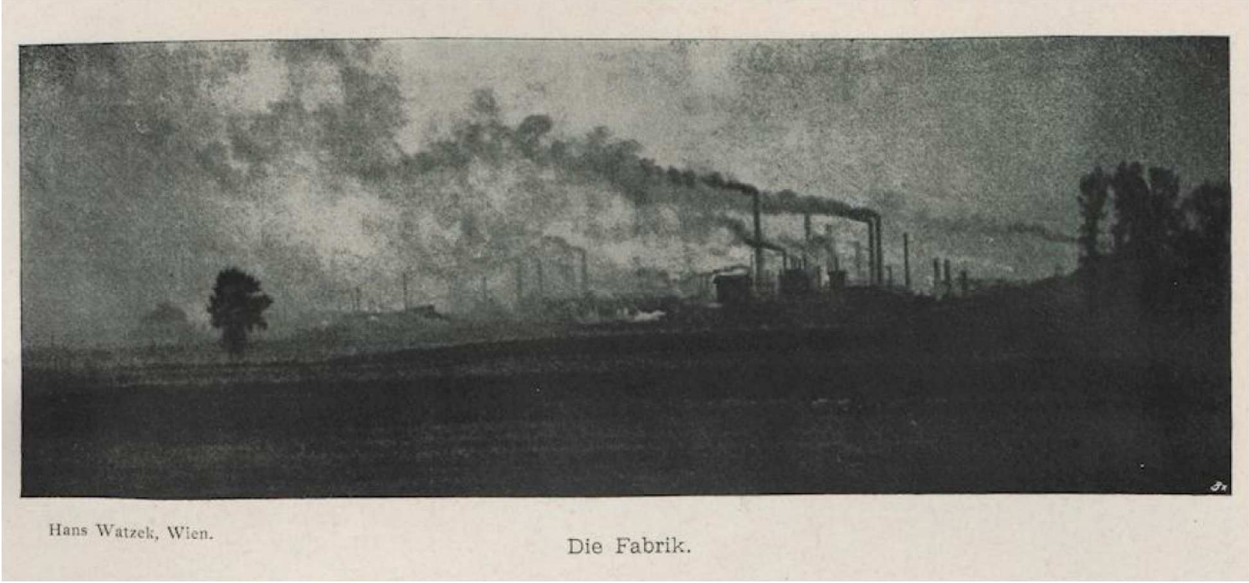


Figure 0.4: Hans Watzek, *Die Fabrik*, 1897, autotype, *Die Kunst in der Photographie* 3 (1899).

For others, however, the thick air of the city provided an opportunity to engage, however partially, with modern milieus, effectively transforming the city into a wonderland of new visual experiences. "Even here is nature, is landscape" wrote the architect August Endell in *Die Schönheit der grossen Stadt* (1908), a book which would be taken up as a model by pictorialist critics like Willi Warstat, "the changing weather, the sun, the rain, the fog, create, out of the hopeless ugliness, a strange new beauty."[11] For the most intrepid of pictorial photographers, the dense atmosphere of industrial modernity provided the opportunity to incorporate even as "unaesthetic" and "apparently trivial" a theme as the modern factory into an established aesthetic vocabulary.[12] Hans Watzek's print, *Die Fabrik* (1897), which unfortunately survives only in the form of a reproduction in the 1899 issue of *Die Kunst in der Photographie*, offers one example

who has discussed this reluctance to engage with urban themes as a symptom of pictorial photography's conventionalism and timidity in confronting the historical realities of its moment. See Ulrich Keller, "The Myth of Art Photography: An Iconographic Analysis," *History of Photography* 9, no.1 (1985): 1-38.

[11] August Endell, *Die Schönheit der grossen Stadt* (Stuttgart: Strecker und Schröder, 1908), 48.

[12] Willi Warstat, "Die Schönheit der grossen Stadt als künstlerisches Problem für den Photographen," *Die photograpische Kunst im Jahre 1909* 8 (1909): 15; Franz Goerke, *Die Kunst in der Photographie* 3 (1899): 41.

of this tentative engagement with the phenomena of industrial modernity (Fig. 0.4). Like the photographs reproduced in hygiene publications, Watzek's picture takes the form of a panorama which places the factory at a distance, occupying a level horizon. Unlike the former, however, here smoke does not so much obscure the horizon as constitute it. If it obscures anything, it is the factory itself, which is allowed to gently merge with the overarching atmosphere of the print, which presents field, factory, trees, and smoke as softly textured silhouettes.

Pictures such as these certainly had their supporters. In his introduction to the issue of *Die Kunst in der Photographie*, the yearbook's editor, Franz Goerke, praised Watzek's "audacity," singling the Viennese photographer out as "one of the most proficient [photographers] in the rendering of haze (*Dunst*)."[13] This attempt to domesticate the visible symbols of industrial modernity through the language of late nineteenth-century landscape aesthetics, however, also had its risks. Pictorial photographers and critics, on the whole, remained highly ambivalent about the aesthetic potential of pollution, and even those who called on photographers to take up the challenge of photographing urban and industrial themes were liable to be charged with indulging too much in the somber and shadowy.[14] Ultimately, as we shall see in the first chapter devoted to pictorialism, this attempt to integrate the smoke and dust of modernity into an established aesthetic language would remain a stillborn, if recurrent, experiment, an attempt at compromise that could not withstand its own contradictions.

What pictorialism's tepid engagement with the smoke of industry did achieve, however, was a retroactive association of pictorial density and industrial pollution, a legacy that will be

[13] Franz Goerke, *Die Kunst in der Photographie* 3 (1899): 41.
[14] Speaking of the work of Anton Meinholz, an Essen-based photographer developed a specialty in industrial pictures, the critic Fritz Matthies-Masuren felt compelled to temper his enthusiasm for Meinholz's talent with the caution: "These images are more focused on shadow than on light, the contrasts are lost and the viewer receives a false impression." Fritz Matthies-Masuren, "Unsere Bilder," *Photographische Rundschau*, 63, no. 2 (1926): 79.

explored in the later chapters of this dissertation. Weimar-era art cinema, which, like pictorial photography, took up the language of Stimmung in an effort to distinguish its productions as specifically artistic, was fascinated by the chiaroscuro of atmospheric effects, devising contraptions of all kinds to turn smoke, soot, and dust into a plastic medium that could be modelled at will. In this cinema, however, the anxiety lurking in the air of the pictorialist print has a tendency to come to the fore. As Lotte Eisner wrote in her seminal study of Weimar cinema, *The Haunted Screen* (1951), "Stimmung sometimes inclines, without the least transition, towards terror," a short statement that immediately attests to how much the category had changed in the time that elapsed between Watzek's moment and the flourishing of Weimar art cinema.[15]

Later in the 1920s, the atmospheric aesthetic of pictorialism became the target of a new generation of photographers and critics, who called instead for a "hygiene of the optical" and encouraged their colleagues to "negate the ozone in the air."[16] Although New Objectivity's insistence on pictorial clarity and clean registration has often been cast as a call for medium specificity—that is, to reorient photography away from the contaminating influence of painting—it is striking that in their polemical tracts, these interwar modernists frequently took recourse to atmospheric metaphors, articulating their project as one of 'clearing the air.' Nothing could be farther from Watzek's factory picture than a photograph such as Albert Renger-

[15] Lotte Eisner, *The Haunted Screen: Expressionism in the German Cinema and the Influence of Max Reinhardt*, trans. Robert Greaves (Berkeley; Los Angeles: University of California Press, 2008), 204.
[16] László Moholy-Nagy, *Painting, Photography, Film,* trans. Janet Seligmann (London: Lund Humphries, 1969), 38; Albert Renger-Patzsch, "Ketzergedanken über künstlerische Photographie," in *Die Freude am Gegenstand: Gesammelte Aufsätze zur Photographie*, eds. Bernd Stiegler and Ann and Jürgen Wilde (Munich: Wilhelm Fink Verlag, 2010), 46.

Figure 0.5: Albert Renger-Patzsch, *Hans-Sachs-Haus, Gelsenkirchen-Altstadt*, 1927, gelatin silver print. © Albert Renger-Patzsch / Archiv Ann u. Jürgen Wilde, Zülpich / Artists Rights Society (ARS), New York, 2021.

Patzsch's picture of the Hans-Sachs-Haus in Gelsenkirchen, an impressive multi-story brick edifice designed by the modernist architect Alfred Fischer, which seems to stand in a space so pristine that it is difficult to read it as anything but an abstraction (Fig. 0.5). The clarity of registration and cleanliness of surface in this picture becomes all the more impressive when one considers the location of the Hans-Sachs-Haus in the heart of the heavily industrial Ruhr Valley, infamous as one of the most polluted regions of Germany. Its radical clarity, then, should be understood above all as a photographic intervention into a compromised environment, giving

form to the vision of 'light, air, and sun' that animated interwar architectural modernism and perhaps existed nowhere as completely as it did on the surface of the New Objectivity print.

The distance between these two pictures serves not only to demonstrate the range of pictorial strategies by which photographers and filmmakers grappled with the problem of how to picture the air of industrial modernity, but also to suggest the emergence of the atmospheric as a plane on which early twentieth-century modernists negotiated their relationship to the environmental realities of industrial modernity and explored possibilities for a new relationship with a man-altered environment. Though the 'solutions' proposed by these pictures ultimately remained illusory (if utterly delusional), in the chapters that follow I hope to demonstrate the examining the aesthetic projects that animated their creation, less as a model for the present, than as a reminder of aesthetic production's power and limitations in responding to the realities of environmental crisis.

Literature Review

Situated at the intersection of Art History, Cinema and Media Studies, and the Environmental Humanities, this dissertation aims in the first place to contribute to an ongoing conversation centered on the complex relations of technical media and the environment. Over the past decade, problem of the Anthropocene—articulated as an urgent concern for the Humanities by theorists such as Bruno Latour and Dipesh Chakraborty—has prompted scholars to attend to the multifaceted ways in which their objects interact with environments across spatial and temporal scales.[17] Expanding the scope of inquiry beyond the question of representation, scholars

[17] Dipesh Chakraborty, "The Climate of History: Four Theses," *Critical Inquiry* 35 (Winter 2009): 197-122; Bruno Latour, *Facing Gaia: Eight Lectures on the New Climactic Realism* (Cambridge: Polity Press, 2017). The concept of the Anthropocene was proposed and popularized by the atmospheric chemist Paul J. Crutzen in the early 2000s to describe a proposed geological epoch, beginning, for Crutzen, with the Industrial Revolution, in which the human

have investigated how media technologies have constructed the environment as an object of study, altered the environment through their material footprint, and might even themselves be understood as environmental.

In this context, the atmospheric has often emerged as figure for the uncertain boundaries between media technologies and the environment, as the recurrence of terms such as 'media atmospheres' and 'atmospheric media' suggests. In his book *The Marvelous Clouds* (2015), for instance, John Durham Peters turns to the atmospheric as a way to better articulate the encompassing, enabling, and ordering operations of contemporary media infrastructure.[18] On the other hand, scholars like Eva Horn and Antonio Somaini, have discussed the elements of the atmosphere themselves as media, pointing the way in which the air, mist, and clouds enable and inflect perceptual experience.[19] Taken together, this body of work has productively positioned the categories of media and environment on a dynamic continuum, drawing attention to their ontological and functional isomorphism.

Though my project is indebted to such efforts to open the field of media studies onto the elements of the environment, it aims to resist the temptation to too neatly collapse one into the other. Rather than argue for the status of air, smoke, and clouds as media (though their capacity to function as such enters into my argument at multiple points), my larger goal is to draw attention to the way in which atmospheric phenomena interacted with media practices at a

---

has become a geophysical agent impacting the global environment. See Paul J. Crutzen, "Geology of Mankind," *Nature* 415, no. 23 (2002).

[18] John Durham Peters, *The Marvelous Clouds: Towards a Philosophy of Elemental Media* (Chicago: University of Chicago Press, 2015).

[19] Eva Horn, "Air as Medium," *Grey Room* 73 (Fall 2018): 6-25; Antonio Somaini, "The Atmospheric Screen: Turner, Hazlitt, Ruskin," in *Screen Genealogies: From Optical Device to Environmental Media*, ed. Craig Buckley, Rüdiger Campe, Francesco Casetti (Amsterdam: Amsterdam University Press, 2019).

distinct historical moment.[20] In doing so, I hope to offer a corrective to the ontological approach that at times characterizes scholarly work on the intersection of media and atmosphere, an approach which risks levelling out the aesthetic and political debates that accompanied discussions of both media and atmosphere at distinct historical junctures. As a corrective to this approach, my project endeavors to place aesthetic practice, technical procedures, and verbal rhetoric into conversation with local environmental conditions that were at once concrete, malleable, and imminently historical.

As we have already seen, this atmosphere was defined above all by its insistent visibility. Thick with smoke, fog, dust, and soot, this historical atmosphere represented both a quotidian reality and strange, new form of visual experience. It is thus hardly surprising to find that the question of atmosphere also found its way into aesthetic discourse. In her dissertation and forthcoming book, Ingrid Christian drawn attention to a surge of interest in the aerial and atmospheric amongst turn of the century art historian, critics, and theorists, which manifested itself not only in the language used to describe works of art, but also in the elevation of the space surrounding the art object as an aesthetic subject in its own right. What interests me in this dissertation, however, is the emergence of this interest in the atmospheric at the same time that the physical atmosphere of the city was becoming a subject of intense debate.

Moreover, by shifting focus from the reception of images to their production, this project offers us a chance to examine the many ways in which photographers and filmmakers grappled with the material stuff of the air on a quotidian basis. In doing so, I draw inspiration from what might be described as a materialist turn in art history, in which historians of photography have

[20] In doing so, I draw inspiration from Somaini's productive distinction between medium and apparatus, although these terms do not appear as such in this dissertation. See Antonio Somaini, "Walter Benjamin's Media Theory: The Medium and the Apparat," *Grey Room* 62 (Winter 2016): 6-41.

played no small role. Following the early interventions of scholars like Joel Snyder and, in the German context, Peter Geimer, historians of photography have turned their attention the impact of materiality, technical processes, and error on photographic representations, complicating reductive notions of medium specificity. Over the past decade, this approach has been taken up by a number of scholars and institutional projects investigating photographs as material objects, including MoMA's Object:Photo project and the multi-institution Foto-Objekte Project, based out of the Staatliche Museen Berlin, the Institut für Europäische Ethnologie at the Humboldt University, and the Kunsthistorisches Institut in Florence. Implicating art historians, curators, and conservation scientists, these collaborative projects have offered an important corrective to the ontological abstractions of more theoretically minded work in both media studies and art history, and for the same reasons, have the potential to bring significant nuance to our understanding of the intersections of media and atmospheric phenomena. Above all else, this materialist approach reveals that the very act of picturing atmospheric phenomena entailed an active grappling with a host of environmental contingencies during the production process.

The past decade has seen also seem a similar approach emerge in the context of cinema and media studies, this time focusing on the sites and processes of film production. Film historians sch as Brian Jacobson and Jennifer Fay have posited the film studio as a technology of environmental control par excellence, while Katharina Loew, in her dissertation and recent book on special effects in German silent cinema, has demonstrated the value in attending carefully to production accounts and related sources. The work of these scholars has left a deep mark on this project, which aims to add a new turn in this conversation by grounding the material practices of photographers and filmmakers within larger historical conversations about ameliorating the environment, which approached the atmospheric as a substance, which, however nebulous, might

be subject to human manipulation. In this way, my project aims to demonstrate how photographic and filmic practices began to suggest themselves as a way to mold the most intangible of phenomena into specific forms, taking part in a larger effort to forge new relationships with the technological world of modernity.

Chapter Breakdown:

This dissertation's argument unfolds across three chapters that together offer a prismatic exploration of the visual and material strategies by which photographers, filmmakers, and critics of the early twentieth century attempted to address, negotiate with, and manipulate the smoke-laden environment of industrial modernity.

Laying the groundwork for the project, the first chapter, "A Romance of Smoke," considers the central place of atmospheric phenomena in the work of pictorial photographers and critics active across Central Europe, but especially those who worked and exhibited in Hamburg. Beginning in the 1890s, pictorial photographers experimented with a variety of methods, including pinhole cameras and soft-focus lenses, artisanal printing methods, coarse-grained papers, and coloured pigments in an effort to render the density of the atmosphere on the surface of their prints, thereby endowing the scene depicted with the quality of Stimmung deemed essential to a work of art. At the heart of this chapter, however, is the way in which this attention to the atmospheric prompted a select group of photographers and critics to turn towards the smoke and fog of the industrial city in a fraught attempt to engage with both the changing realities of the urban environment and an emergent discourse of photographic modernism. Smoke in this context, provided an ideal medium through which the phenomena of modernity

might be incorporated into an established framework, however, in practice, this strategy would be more notable for its failure than success.

Building off the first chapter, the second chapter, "Chemistry and Chiaroscuro," takes as its site the German silent film studio, where an elaborate apparatus glass and iron architecture, decommissioned military equipment, and chemical experiments were recruited into the production of the artificial clouds and smoke for which Weimar cinema would become famous. Like the pictorial photographers and critics discussed in the first chapter, filmmakers and critics of the interwar period readily invoked the language of Stimmung to elevate their productions as works of art. But if the previous chapter saw photographers engaged in an attempt to domesticate the smoke of industry, here, smoke more often manifests itself as a chaotic force. Though Stimmung had once held out the promise of relief or reprise from the modernity, it became, in the context of Weimar cinema, contaminated with growing anxieties over the human body's vulnerability to its immediate environment. Moving between the discourse of film critics, the material practices of studio technicians, and the physical environment of the studio itself, this chapter thus posits the artificial atmospheres of Weimar cinema as an ambiguous response to both the noxious smoke of the city and the chemical trauma of the First World War, characterized in equal measure by fear and fascination over man's increasing power to alter his environment.

Finally, the third chapter, "The Air of Objectivity," focuses on the rejection of pictorial photography by photographers and critics associated with New Objectivity in favour of a new aesthetic of uniform sharpness, clear contours, and blank backgrounds. Placing interwar photography into conversation with the discourse surrounding the New Building, whose architectural projects these same photographers frequently documented, this chapter argues for

the importance of New Objectivity's aesthetics of clarity in giving visual form to the world of 'light, air, and sun' that interwar modernists sought to create out of the dust and smoke of the long nineteenth century. Crucially, however, the clarity of New Objectivity was not achieved without effort, especially when photographers were called upon to document the sites of industry. As I argue, the thick, polluted air of industrial regions like the Ruhr—the largest center of coal and steel production in Germany—not only posed problems for human health, but also complicated photographers' attempts to produce clear and confident pictures of industry, necessitating a host of manipulations in the process of shooting, development, and printing. This chapter thus tracks the fraught exchange between an aesthetics of clarity and an environment that was anything but, ultimately positioning the photography of New Objectivity as a pictorial intervention into a compromised environment.

Though some degree of chronological progression can be traced from one chapter to the next, it should be stated at the outset that it is not my intention to suggest a smooth line of development, whereby each pictorial strategy emerges from and displaces the last. Rather, as will become clear in the chapters themselves, the aesthetic strategies examined in this dissertation, though emerging at different moments, in different locations, out of distinct representational traditions, existed conterminously as a set of distinct alternatives for the grappling with the problems—at once physical and aesthetic—presented by the smoke, fog, and dust swirling in the air. In presenting this panorama, my goal is to mitigate the danger of suggesting a deterministic relationship between the physical environment and its pictorial representation, highlighting instead the way in which photographic media actively mediate the physical environment.

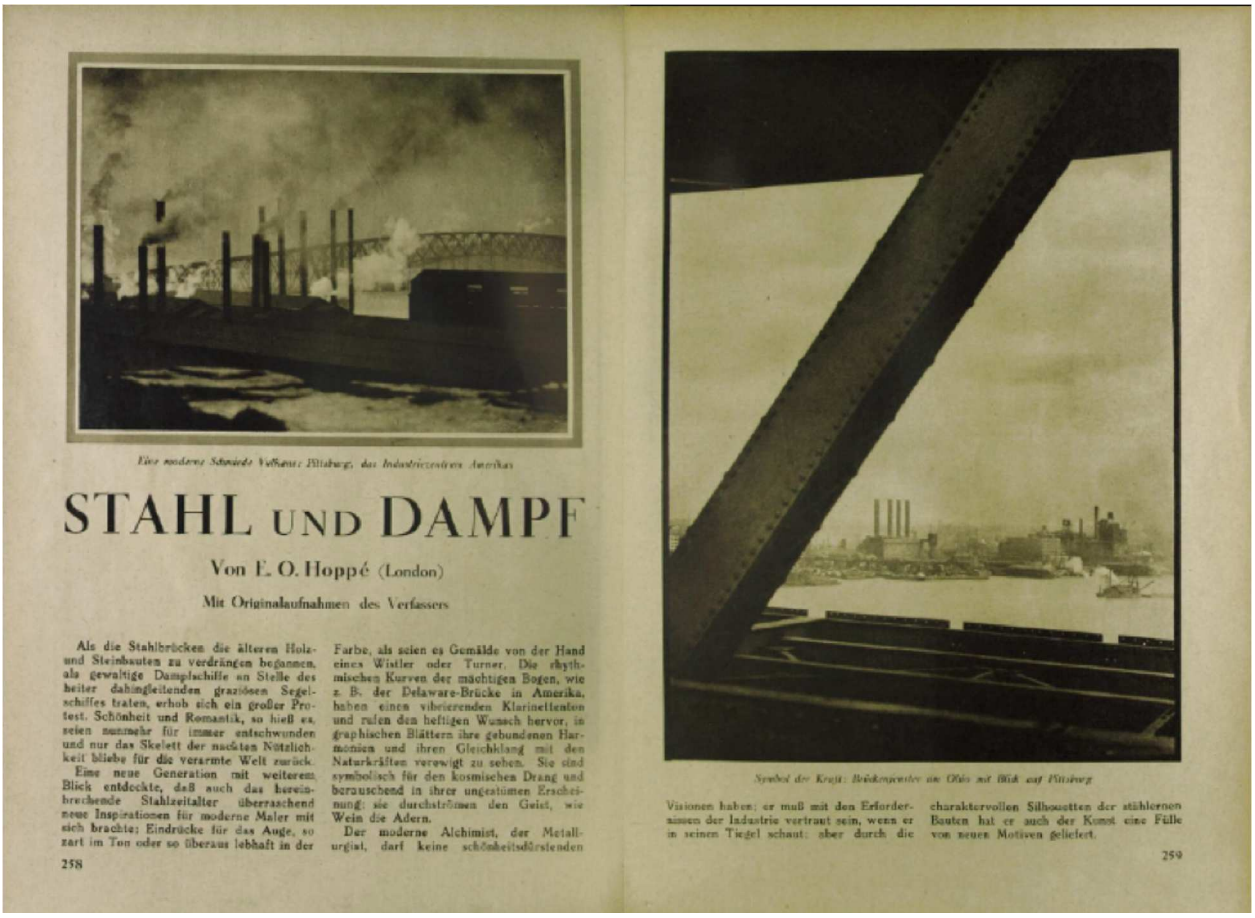
CHAPTER ONE

A ROMANCE OF SMOKE: PICTORIAL PHOTOGRAPHY AND THE POETICS OF POLLUTION

In March 1928, readers of *Scherl's Magazin* encountered a short illustrated article called "Stahl und Dampf," written by the German-born, London-based, globetrotting photographer Emil Otto Hoppé. In it, the photographer set out to make a case for the particular "charm (*Reiz*)" of industry in both words and images.[1] The photographs featured in the article treated readers to a selection of views from the industrial heartland of the American rust-belt, produced by Hoppé during his travels across the United States between 1921 and 1926. Reproduced in soft rotogravure illustrations, Hoppé's photographs evince evident delight at the delicate filigree of steel cables, the weighty silhouette of the Delaware Bridge, and the profuse masses of smoke and steam that waft around the smokestacks of the Pittsburgh skyline, which is described in one caption as a "modern forge of Vulcan" (Fig. 1.1). With these illustrations, Hoppé hoped to convince his audience that beauty and romance (*Schönheit und Romantik*) had not disappeared under the sign of modernity, but rather, lay waiting to be discovered at its heart. Hoppé thus positioned himself as a man at the forefront of a new aesthetic frontier, as a "pioneer of the beauty of steel and steam," in short, as a protagonist of the avant-garde.[2]

This persuasiveness of this claim, however, is tempered by its anachronism. By March 1928, the debate about the beauty of the city, industrial architecture, and indeed modernity itself, though by no means settled, was already decades old—older, in fact, than Hoppé himself, who would turn fifty that year. Sigfried Giedion's seminal history of the Modern Movement, *Bauen in*

[1] E.O. Hoppé, "Stahl und Dampf," *Scherl's Magazin* (March 1928): 260.
[2] Ibid., 260.



Eine moderne Schmiede Vulkans: Pittsburg, das Industriezentrum Amerikas

STAHL UND DAMPF

Von E. O. Hoppé (London)

Mit Originalaufnahmen des Verfassers

Als die Stahlbrücken die älteren Holz- und Steinbauten zu verdrängen begannen, als gewaltige Dampfschiffe an Stelle des heiter dahingleitenden graziösen Segelschiffes traten, erhob sich ein großer Protest. Schönheit und Romantik, so hieß es, seien nunmehr für immer entschwunden und nur das Skelett der nacktesten Nützlichkeit bliebe für die verarmte Welt zurück.

Eine neue Generation mit weiterem Blick entdeckte, daß auch das hereinbrechende Stahlzeitalter überraschend neue Inspirationen für moderne Maler mit sich brachte: Eindrücke für das Auge, so zart im Ton oder so überaus lebhaft in der Farbe, als seien es Gemälde von der Hand eines Whistler oder Turner. Die rhythmischen Kurven der mächtigen Bogen, wie z. B. der Delaware-Brücke in Amerika, haben einen vibrierenden Klarinettenton und rufen den heftigen Wunsch hervor, in graphischen Blättern ihre gebundenen Harmonien und ihren Gleichklang mit den Naturkräften verewigt zu sehen. Sie sind symbolisch für den kosmischen Drang und berauschend in ihrer ungeatümen Erscheinung: sie durchströmen den Geist, wie Wein die Adern.

Der moderne Alchimist, der Metallurgist, darf keine schönheitsdürstenden

258

Symbol der Kraft: Brückenpfeiler am Ohio mit Blick auf Pittsburg

Visionen haben; er muß mit den Erfordernissen der Industrie vertraut sein, wenn er in seinen Tiegel schaut; aber durch die charaktervollen Silhouetten der stählernen Bauten hat er auch der Kunst eine Fülle von neuen Motiven geliefert.

259

Figure 1.1: Two-pages spread of E.O. Hoppé's article, "Stahl und Dampf," as it appeared in *Scherl's Magazin* in March 1928.

Frankreich, would appear later that same year, and though its polemical tone does suggest that this controversy remained lively, when placed against this background Hoppé's claim to the status of a pioneer begins to seem somewhat overstated, if not downright improbable. Moreover, unlike Giedion, Hoppé's prose remained unapologetically middle brow. *Schönheit, Romantik, Reiz*—in Hoppé's text we find an aesthetic vocabulary informed by the categories of Romanticism, filtered through turn-of-the-century art criticism, and peppered with a healthy dose of mythological formulations. To take just one example, the notion of *Reiz* (charm, but also stimulus, even irritation), had become, in the writings of turn-of-the-century commentators like Karl Lamprecht, Willy Hellpach, and Richard Hamann, closely associated with the aesthetics of

Impressionism, the influence of which might be deduced from Hoppé's verbal and visual preoccupation with the atmospheric elements of the industrial environment.[3] However, it is perhaps in the photographs themselves that Hoppé's claim to belong to an avant-garde becomes most complicated. Already between three to seven years old, these photographs, which correspond closely to a similar series included in Hoppé's *Das romantische Amerika* (1927), exhibit all the hallmarks of a belated pictorialism, a fascination with silhouettes, indistinct lines, and blurred horizons that set them apart from the sharp pictures of younger contemporaries like Albert Renger-Patzsch, whose photographs would come to define the course of photographic modernism in the years that followed.

Nonetheless, it would be wrong to entirely dismiss Hoppé's claim to break new ground. Balancing the somewhat antiquated, velvety texture of his pictures is a decidedly innovated approach to framing—his experiments with canted lines, asymmetry, and mediated views. Moreover, Hoppé's illustrations were made from prints that were in themselves, more or less, straight photographs. As Phillip Prodger has pointed out, Hoppé was one of the first art photographers to turn to gelatin silver bromide paper for printing (although he generally preferred the softer effect of rotogravure for their reproduction).[4] Moreover, the numerous articles that Hoppé authored on the subject of industrial beauty between 1927 and 1928 can be taken as a sign that the photographer, whose work prior to this point was concerned primary with portraiture and pastoral landscapes, was well-aware of the need to reposition himself in order to

[3] Richard Hamann, *Der Impressionismus in Leben und Kunst* (Cologne: M. Dumont-Schaubergschen Buchhandlung, 1907); Willy Hellpach, *Nervosität und Kultur* (Berlin: J. Räde, 1902); Lamprecht. Also see Frederic J. Schwartz, *The Werkbund: Design Theory and Mass Culture Before the First World War* (New Haven: Yale University Press, 1996) and Michael Cowan, *The Cult of Will: Nervousness and German Modernity* (Philadelphia: Penn State University Press, 2008).
[4] Philip Prodger, *E.O. Hoppé's America: Modernist Photographs from the 1920s* (New York: W.W. Norton and Company, 2007), 16-17.

maintain relevance.[5] Indeed, there is ample evidence that Hoppé was well aware of the need to reposition himself in order to maintain relevance. Between 1927 and 1928, Hoppé authored numerous articles on the subject of industrial beauty, which he published in a wide variety of periodicals. His efforts in this respect were not without success. Albert Renger-Patzsch was impressed enough by Hoppé's work to send the latter a copy of his photobook *Die Welt ist schön* (1928) for review in the English press.[6] Hoppé's photographs thus occupy an uncertain ground between a number of terms that are often opposed in accounts of the history of modernism—between the mechanical and romantic, the technological and pastoral, the innovative and outmoded, the modernist and the middlebrow. In this respect, Hoppé's work might be taken as exemplary of the delicate balancing act that charactered (late) pictorialist engagements with both photographic modernism and industrial modernity during the early twentieth century.

In the context of this double negotiation, atmospheric phenomena such as smoke, fog, and steam would play a crucial role. It is no coincidence that it was precisely to these phenomena that Hoppé turned in order to elaborate the particular charm of industrial. Rather, when Hoppé described the built environment of industry, profusely, as "gently shrouded in a veil of mother-of-pearl fog and obscured by ethereal, floating, dreamy, sinuous clouds of snow-white steam that play around [the] heights [of smokestacks]," he was drawing on a lengthy aesthetic tradition that positioned the atmospheric as a vehicle not only of beauty, but aesthetic experience itself.[7] Though the invocation of Vulcan that appeared in the caption of the article's first illustration connoted an almost violent energy (more in keeping with the industrial hellscapes described by

[5] These were published in both the English and German press. Titles include "Stahl und Beton," "Poesie der Technik," "Romantik der Technik." Published in a variety of journals—professional engineering journals, popular science journals, in addition to his contributions to photo publications.
[6] Correspondence from E.O. Hoppé to Albert Renger-Patzsch, 1928, Folder 4, Box 1, Albert Renger-Patzsch Papers, 1890-1980, Getty Research Institute, Los Angeles, California, USA.
[7] Hoppé, 260.

Charles Dickens), here Hoppé renders the smoke and steam of industry in gentler terms, as elements that soften the harsh lines iron and steel, while at the same engendering a host of optical effects that possess a fascination of their own.[8] For these same reasons, the phenomena of smoke and steam also allowed art photographers like Hoppé to selectively embrace aspects of photographic modernism while hewing close to aesthetic criteria developed in the context of pictorialism, which in the early twentieth century was increasingly associated with soft-focus effects.[9] Smoke, fog, and steam, as pictorial elements, blurred the boundary between straight and pictorial photography, allowing photographers to obtain painterly effects with minimal embellishment. The man-altered atmospheres of the urban and industrial environment thus became a crucial component of a strategy through which a select group of early twentieth-century art photographers and critics sought to respond to emergent pressures from both the within the field of photography and without. Developing what might be called a poetics of pollution, this generation of belated romantics found in the atmospheric by-products of industry an ideal medium through which the sites and experiences of modernity might be incorporated into established aesthetics categories, at once preparing the ground for a modernism of the machine and forestalling its most radical realization.

This chapter attempts to trace the development of this poetics of pollution by following select protagonists of the pictorial photography movement from its early days in the 1890s

[8] For example, in Dickens's *The Old Curiosity Shop* (1841), *American Notes* (1842), *Bleak House* (1852-53), and *Our Mutual Friend* (1864-65). This imaginary of the industrial atmosphere as hellish and menacing was common across Europe in the latter half of the nineteenth century, but would reach something of a pitch during turn-of-the-century moment in which pictorial photography developed, appearing in the work of the German naturalist Wilhelm Bölsche and innumerable other authors aligned with Germany's various reform movements.

[9] See Elizabeth Anne McCauley's discussion of the solidification of pictorial photography into 'Pictorialism' in her book on Clarence White. McCauley observes that as pictorial photography retroactively became Pictorialism, the heterogeneous practices that fell under that label became more narrowly associated with soft-focus, a shift which McCauley locates in the work of historians like Newhall. The debates in photography reviews of the 1920s, however, suggest that this process began much sooner. Elizabeth Anne McCauley, *Clarence H. White and His World: The Art and Craft of Photography, 1895-1925* (New Haven: Yale University Press, 2017), 14-15.

through to the late 1920s. In doing so, my intention is less to argue for a latent modernism in the work of art photographers like Hoppé than it is to offer a closer account of the dynamics internal to pictorialism, as photographers sought to revitalize a movement on the verge of exhaustion. As I will argue, pictorialists' tentative embrace of modern themes, the adaptation of long-standing aesthetic concepts such as 'beauty,' 'harmony,' and 'atmosphere' to the realities of a modern environment, and the turn to the industrial atmosphere as a solution to the challenge of straight photography should be regarded as a calculated strategy through which photographers and critics sought to come to terms with the not exactly new, but nonetheless strange and estranging, experiences of modernity. This effort to approach the new and unfamiliar through the comfortable categories of late nineteenth-century aesthetics, however, was a precarious one in which a number of contradictions emerged, since, as we shall see, as the darkened skies and corrosive smoke of industry itself exerted a force on these same categories.

The story that this chapter tells will be largely rooted in the community of pictorial photographers and critics working and exhibiting across Germany, although, as is already apparent, it is not one that can easily be confined within national borders. The case of Hoppé is emblematic in this respect. Born and raised in Munich, Hoppé studies in Paris and Vienna before moving to London, where he began a career in photography that would take him across the globe. Yet through all his travels, Hoppé remained in close contact with the photographic community in Germany and Austria, exhibiting the work of German photographers in London, curating selections of British photography in Germany, and contributing photographs and articles to German photography journals and the illustrated press. In this, Hoppé is typical of the internationalism that characterized pictorial photography, a movement that sustained itself

through a close network of publications and exhibitions that regularly reached across national and geographic boundaries.[10]

Equally international in character were the dramatic transformations engendered by urbanization and industrialization, which by the end of the century had given rise to palpable environmental degradation. The pace and scale of these developments, of course, varied greatly across national contexts. As many historians have noted, industrialization arrived late in Germany, but it proceeded with a singular rapidity. Precisely because of its belated industrialization, however, the examples of Great Britain and the United States occupied an important position in the cultural and scientific debates of early twentieth-century Germany. As they began to study the 'smoke plague' (*Rauchplage*) afflicting the nation's cities, German scientists gratefully built on research from across the channel. Meanwhile, photographers and critics looked to the work of their English and American colleagues as models for treating the environmental realities of industrial modernity in pictorial form. Indeed, incorporating the internationalism of modernity and modernism within a national framework was part of the challenge that German art photography faced, a problem to which the phenomenon of smoke provided an ingenious if fragile solution.

Atmosphere and the Moods of Weather

In order to understand how photographers of the teens and twenties stretched the aesthetic conventions of pictorialism in order to accommodate the pressures of industrial

[10] Alfred Stieglitz might be taken as a similar case, having spent crucial formative years in Germany studying with the German chemist and photographer Hermann Wilhelm Vogel between 1882 and 1886. Moreover, Stieglitz was inspired to create *Camera Work* on the model of the *Wiener photographische Blätter*, where he exhibited a number of photographs over the course of the 1890s.

modernity, it is important to first consider the tradition in which these photographers were formed. Although its roots can be traced back to the 1860s, the pictorial photography movement proper emerged in the late 1880s as a loosely international network of photographers, clubs, and critics who experimented with soft-focus lenses, artisanal printing methods, specialty papers, and lavish mounts and frames in an effort to elevate photography as a fine art.[11] The movement arrived somewhat later in Germany and Austria compared to Great Britain, however it developed rapidly during the 1890s to become a lasting force in Central European photographic culture.[12] By the end of the century, most major urban centers could boast a camera club or society dedicated to the promotion of what was variously known as 'amateur photography' (*Amateurphotographie*), 'pictorial photography' (*bildmässige Photographie*), or 'art photography' (*Kunstphotographie*). Although each of these terms carried distinct connotations, photographers and critics from the period used them relatively interchangeably to describe an ideal of photographic art defined primarily in opposition to the exactitude and apparent soullessness of commercial photography.[13] From its beginnings, the movement was a highly

[11] See Peter C. Bunnell (ed.), *A Photographic Vision: Pictorial Photography, 1889-1923* (Santa Barbara: P. Smith, 1980); Ulrich Keller, "The Myth of Art Photography: An Iconographic Analysis," *History of Photography* 9, no.1 (1985): 1-38; Paul Spencer Sternberger, *Between Amateur and Aesthete: The Legitimization of Photography as Art in America, 1880-1900* (Albuquerque: University of New Mexico Press, 2001).

[12] Fritz Loescher, "Die Entwicklung der künstlerische Photographie in Deutschland," in *Camera-Kunst: Eine internationale Sammlung von Kunst der Neuzeit*, ed. Ernst Juhl (Berlin: Verlag Gustav Schmidt, 1903), 20; Helmut Gernsheim, "The Aesthetic Movement," *The History of Photography from the Earliest Use of the Camera Obscura in the Eleventh Century to 1914* (London: Thames & Hudson, 1969), 466-468. For more recent scholarship on the history of pictorial photography in Germany and Austria, see Rüdiger Joppien (ed.), *Kunstphotographie um 1900: Die Ernst Juhl Sammlung* (Hamburg: Museum für Kunst und Gewerbe, 1989); Christine Kuhn, *Kunstphotographie um 1900: Die Sammlung Fritz Matthies-Masuren* (Berlin: Staatliche Museen Berlin, 2003); Patrick Daum and Francis Ribemont (eds.), *The Impressionist Camera: Pictorial Photography in Europe* (Saint Louis: Saint Louis Art Museum, 2006); Monika Faber, *Heinrich Kühn: Die vollkommene Fotografie* (Berlin: Hatje Cantz Verlag, 2010); and Christian Joschke, *Les yeux de la nation: Photographie amateur et société dans l'Allemagne de Guillaume II* (Paris: Presses du réel, 2014).

[13] The term "amateur" photography was especially important for Alfred Lichtwark, who wrote extensively about amateurism in relation to aesthetic education (Kunsterziehung). As the name implies, Kunstphotographie or künstlerische Photographie (as it is sometimes rendered) had somewhat loftier associations, however "amateur" societies also defined themselves as committed to the promotion of "artistic" photography, and the discourses of amateur and art photography overlapped to such an extent as to merit being treated in tandem, at least in discussions focused on the pictorial movement as a whole rather than individual photographers or critics.

international one, taking ample inspiration from the work of British photographers as well as French painters. Local aesthetic traditions, however, remained important to the development of pictorialism in Germany, something that is not surprising given the import placed on establishing a national art and culture in the years between the Franco-Prussian and First World Wars.[14] As we shall see, the legacy of German Romanticism, with its attention to local landscapes and atmospheric conditions, would prove especially important to arguments for the artistic merits of photography in this context, elevating the atmospheric as a visual and discursive motif that would remain at the heart of debates on photographic media in the decades that followed.

The rapid rise of the pictorial photography movement in Germany and Austria did not occur by chance, but rather was the result of the coordinated efforts of photography clubs, dedicated periodicals, and a series of pioneering exhibitions that sought to create and educate a public including both makers and viewers.[15] The importance of the photographic clubs and societies in this context cannot be overstated. These organizations fostered photographic culture not only through regular meetings, which provided a forum for the discussions of both aesthetics and technical processes, but also through the organization of study courses and excursions, and in some cases the lending of equipment and workspaces which might otherwise prove

[14] Of course, this nationalism took many different forms in the artistic discourse and production of this period, and many of the individuals discussed in this chapter had a complex relationship to it. Most notably, calls for German art conflicted with the increasing internationalism of "modern" art (a term which was often used as a synonym for work in a broadly impressionist mode), in which pictorial photographers, critics, and museum professionals who supported them were highly invested. Nonetheless, the climate was such that even art professionals with a complex relationship to nationalism were often required to make some gestures towards it. More a general overview of the artistic climate through a series of case studies, see Françoise Forster-Hahn (ed.), *Imagining Modern German Culture, 1889-1910* (Washington, D.C.: National Gallery of Art, 1996). An excellent discussion of how the question of nationalism played out in Alfred Lichtwark's case can be found in Carolyn Kay, *Art and the German Bourgeoisie: Alfred Lichtwark and Modern Painting in Hamburg, 1886-1914* (Toronto: University of Toronto Press, 2002), 9-41.

[15] See Jens Jäger, "Amateurphotographen: Vereine und kunstphotographische Bewegung in Hamburg, 1890-1910," in Rüdiger Joppien (ed.), *Kunstphotographie um 1900: Die Ernst Juhl Sammlung* (Hamburg: Museum für Kunst und Gewerbe, 1989; Christian Joschke, "La photographie, la ville et ses notables: Hamburg, 1893," *Etudes photographiques* (November 2005): http://etudesphotographiques.revues.org/943.

prohibitive. Although by no means the oldest photography club in Central Europe (this honour went to the Wiener Kamera-Club, founded as the Club der Amateur Photographen in 1887), the Hamburg-based Gesellschaft zur Förderung der Amateur-Photographie (founded as the Amateur-Photographen-Verein in 1891), whose activities will be the focus of this discussion, became a particular important force in the promotion of art photography thanks to the efforts of key members in the domains of publication and exhibition.

By this time, the port-city of Hamburg had already developed a modest reputation as a node on the cultural map of Central Europe. Taking up a position as the director of the Hamburger Kunsthalle in 1886, the Hamburg-born art critic and educator Alfred Lichtwark worked quickly to expand the institution's collection and develop a substantial program for arts education, transforming the commercial city into a something of a cultural center.[16] In 1893, Lichtwark made an unprecedent move by opening the doors of the Kunsthalle to photography, collaborating with Ernst Juhl, then secretary of the Gesellschaft zur Förderung der Amateur-Photographie, to host the city's International Exhibition of Amateur Photography, the first such exhibition to be held in the space of an institution dedicate to fine art. Running from October 1st to November 20th, 1893, this event inaugurated series of exhibitions that would recur roughly annually from 1893 to 1903. Taking advantage of the city's position as a commercial gateway, it featured a notably international selection, including work from Germany, Austria, France, England, and the United States (amongst others), allowing Hamburg to become something of a waystation connecting photographers across Europe and North America.[17] It was at the 1899 Hamburg exhibition, for instance, that the calotypes of David Octavius Hill were first exhibited

[16] For more on Lichtwark, see Kay.
[17] Enno Kaufhold, "Photographie und Malerei im Uebergang: Bildkultur in Hamburg vor der Jahrhundertwende," in *Kunstphotographie um 1900: Die Sammlung Ernst Juhl* (Hamburg: Museum für Kunst und Gewerbe Hamburg, 1989), 14.

outside of England, inaugurating a continental fascination with the work of the British photographer that would continue to resonate well into the 1930s.[18]

Hamburg was not the first city to host such an exhibition of artistic photography, however the decision to hold it in the Hamburger Kunsthalle marked an important moment in the history of art photography. Although photography had long since developed into a thriving industry, the question of its artistic merit was still far from settled. The Kunsthalle thus provided amateur photographers with a much-desired sense of legitimacy, as both a physical setting and an institution. As the photo-historian Christian Joschke has argued, however, an equally important part of this exhibition's legacy was its relatively ecumenical approach to submissions. Of the seven thousand photographic prints submitted to the organizers, some six thousand were ultimately selected for display, a notable departure from the strict criteria that characterized earlier exhibitions such as the *Internationale Ausstellung Künstlerischer Photographien* held in Vienna in 1891 (or, for that matter, later exhibitions of photography such as Beaumont Newhall's *Photography, 1839-1937* at the Museum of Modern Art in 1937). The only type of work that was categorically excluded from the Hamburg exhibition was commercial photography. Importantly, this relative openness allowed the exhibition organizers to frame amateur photography as a popular and democratic activity aligned with Alfred Lichtwark's understanding of aesthetic education as a means of nation-building and social integration.[19] Such an approach moreover contributed to the development of an expanded audience for art photography.[20] The exhibition received more than 13000 visitors over its 51-day run and was

[18] Gernsheim, 466.
[19] Joschke, 6-7. Lichtwark maintained that "a strong culture, common to all, is one element that binds a people together. It is also the most secure defense against the invasion of foreign influences." Lichtwark quoted in Kay, 42.
[20] Of course, photography remained an expensive hobby beyond the reach of many; "accessible" and "democratic" in this context referred largely to middle class (often male) citizens. Moreover, as Jens Jäger relates, the membership fees for the Hamburg Gesellschaft zur Förderung der Amateurphotographie were the most expensive in Germany.

accompanied by a series of public lectures in which Lichtwark framed amateur photography as a part of middle-class Bildung.[21]

Despite the success of the exhibition, however, the question of photography's legitimacy as an art would continue to dominate debates about amateur photography over the next decade. In the midst of these debates, the notion of *Stimmung*—a term whose meaning roughly encompasses the ideas of mood, atmosphere, and attunement—would emerge as a key rhetorical motif in photographic criticism. Although the term underwent a number of transformations over the course of the nineteenth century, one of its defining characteristics, as David Wellbery has argued, was its capacity to straddle the subjective and objective divide.[22] Stimmung thus might refer to the mood of a person, the ambience of a place, or the diffuse atmosphere that draws a beholder into relation with the scene observed, whether it belonged to the natural world or a work of art.[23] Stimmung first entered the domain of aesthetics through a musical metaphor—the tuning of an instrument—but the term quickly acquired a life of its own, developing alongside the rise of landscape painting to become a mainstay in the vocabulary of German aesthetic criticism. Indeed, one might even say that it played a critical role in the elevation of landscape painting as such, with the result that the art historian Alois Riegl could

---

Moreover, the cost of photographic equipment could prove prohibitive. In 1895, the average reported income in Hamburg was 900 Goldmarks, and even a cheap camera cost about 50 Goldmarks. That being said, camera-clubs did greatly increase accessibility, as many offered the possibility of renting equipment. See Jens Jäger, 34-35.

[21] Claudia Pfeiffer and Ulrich Rüter, "The Ernst Juhl Collection at the Kunstbibliothek," *Inspirations and Interactions—Pictorialism Reconsidered*, 8. Also see Jäger, 36. Lichtwark's lectures were also published in a local newspaper and would later appear collected in book-form, see Alfred Lichtwark, *Die Bedeutung der Amateur-Photographie* (Halle: W. Knapp, 1894).

[22] David Wellbery, "Stimmung," *New Formations* 93 (Summer 2018): 8.

[23] In this sense, Stimmung is also a precursor to Walter Benjamin's notion of aura, as scholars such as Gernot Böhme and Antonio Somaini have pointed out. It was also, crucially, part of a larger turn to aerial metaphors in the context of aesthetic theory. See Gernot Böhme, "Atmosphere as a Fundamental Concept of a New Aesthetics," *Theses Eleven* 36 (1993): 113-126; Antonio Somaini, "Walter Benjamin's Media Theory: The Medium and the Apparat," *Grey Room* 62 (Winter 2016): 6-41. Ingrid Christian has also argued for air as a metaphor of aesthetic experience and influence in Warburg's work, see Margarete Ingrid Christian, "Aer, Aurae, Venti: Philology and Physiology in Aby Warburg's Dissertation on Botticelli," *PMLA* 129, no. 3 (2014): 399-416.

declare, in his 1899 essay "Die Stimmung als Inhalt der modernen Kunst," that landscape occupied that "most noble place in modern art."[24]

For many critics, the importance of Stimmung to landscape painting lay in its power to unify the disparate features of the landscape into an expressive whole capable of transmitting the artist's vision to the viewer. Georg Simmel provided a cogent summary of this position in his essay on landscape from 1913. In this text, Simmel posited landscape as a specifically modern phenomenon, arguing that a landscape as such comes into being only once a segment of nature has been isolated and endowed with its own unity.[25] Stimmung, for Simmel, functioned precisely as the agent of this unity: "The most important carrier of this unity," he wrote, "may well be the Stimmung, as we call it, of a landscape. […] The Stimmung of a landscape permeates all its separate components, frequently without it being attributable to any one of them."[26] It is possible that Simmel had the Claude glass—a small convex, tinted mirror that was used by frame and soften a landscape view—in mind as he developed this description.[27] By the end of nineteenth century, Claude glasses had even become common amongst tourists, having become a relatively common medium through which to experience the natural world. As with the Claude glass, Stimmung, according to Simmel's definition, is not to be understood as a belonging to the scene observed, but rather, emerges through the gaze of the beholder, which confers a segment of nature with perceptual and affective coherence.[28] Simmel himself was hesitant to acknowledge that photography could perform a similar function, however it is not difficult to understand why

[24] Alois Riegl, "Die Stimmung als Inhalt der modernen Kunst," *Die graphische Kunst* 22 (1899): 54.
[25] Georg Simmel, "The Philosophy of Landscape," *Theory, Culture & Society* 24 (2007): 21.
[26] Ibid., 26.
[27] The Claude glass was famously associated with Claude Lorrain and was an important influence on the development of the picturesque as an aesthetic ideal. For more on the Claude glass, see Arnaud Maillet, *The Claude Glass: Use and Meaning of the Black Mirror in Western Art* (Cambridge, Mass.: Zone Books, 2004).
[28] Simmel, 27.

such an understanding of Stimmung had proved attractive to pictorial photographers, providing as it did a language through which to counter the charge of soulless imitation so often levelled at photography.[29] Stimmung, in this sense, furnished photographers with a potent model through which an isolated fragment of the natural world, such as that isolated by the camera's lens, could be endowed with aesthetic unity through the power of the gaze.

The term thus became a mainstay in German-language photographic criticism. For the photographer, collector, and critic Fritz Matthies-Masuren, the "true goal" of artistic photography lay in the "reproduction of Stimmungen in contrast to expressionless views—artistic impressions of nature."[30] Landscape thus emerged as an especially prominent genre amongst Central European pictorial photographers—so much so that Matthies-Masuren, when reflecting back on his tenure as the editor of *Photographische Rundschau*, suggested that the periodical might be more accurately described as a "journal for landscape photography."[31] But as Matthies-Masuren's statement makes clear, photographers remained anxious to distinguish their landscapes from artless reproductions of the visible world. To do so, pictorial photographers took recourse to a variety of experimental materials and techniques in an effort to bring the nebulous quality of Stimmung to the surface of their prints. Using soft-focus lenses, fine printing methods, and coarse-grained paper bases, pictorial photographers worked against the photographic plate's indiscriminate reproduction of detail to produce pictures in which the particularities of the depicted scene dissolved into a generalized, unified impression (Figs. 1.2-3).[32]

---

[29] For more on this debate see Wolfgang Kemp, "Fotografie als Kunst," in *Theorie der Fotografie I, 1839-1912*, ed. Wolfgang Kemp (Passau: Schirmer/Mosel, 1980): 13-24.
[30] Fritz Matthies-Masuren, *Künstlerische Photographie* (Leipzig: Marquardt & Co., 1907), 43.
[31] Fritz Matthies-Masuren, *Photographische Rundschau* 25, no. 20 (1911): 243. *Photographische Rundschau* was the principal organ of a number of photography clubs across Germany and Austria.
[32] Wolfgang Ullrich has compellingly argued for the importance of the "unsharp" as a vehicle for creating an impression of unity and wholeness (as opposed to the isolated details presented by a sharp photograph). Wolfgang

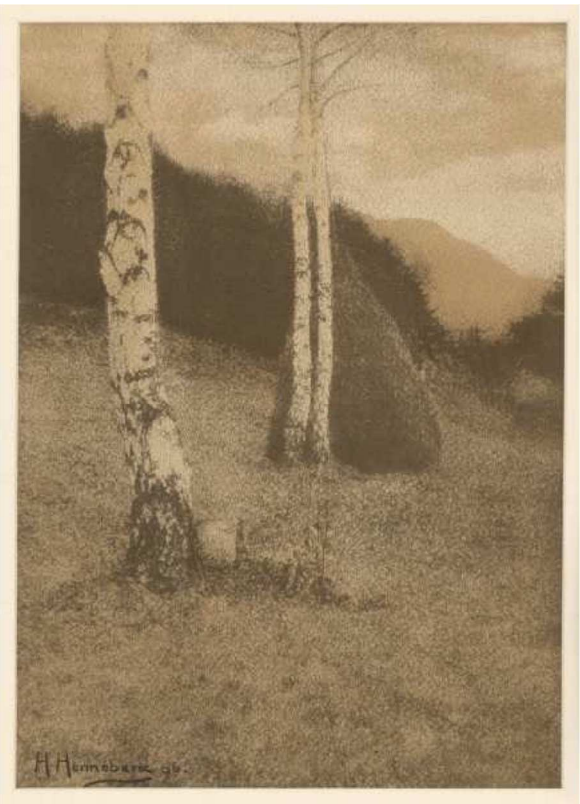


Figure 1.2: Hugo Henneberg, *Birken*, 1896, gum bichromate print in ochre-brown. Kunstbibliothek, Staatliche Museen zu Berlin, Sammlung Fotografie (Sammlung Matthies-Masuren). This work is reproduced under the Creative Commons BY-NC-SA 3.0 License.
Figure 1.3: Heinrich Kühn, *Dämmerung*, 1896, gum bichromate print in black-green. Kunstbibliothek, Staatliche Museen zu Berlin, Sammlung Fotografie (Sammlung Matthies-Masuren). This work is reproduced under the Creative Commons BY-NC-SA 3.0 License.

In this way, the elevation of Stimmung also contributed to a shift of emphasis within art photography. Where earlier advocates of artistic photography such as Henry Peach Robinson, whose work was translated into German and published in *Photographische Mitteilungen* in the 1860s, stressed composition as the primary means of achieving artistic merit, by the 1890s this concern with composition, while not entirely displaced, was nonetheless overshadowed by a growing interest in the soft effects enabled by artisanal printing methods. Processes such as platinum printing, gum bichromate printing, hand-pulled photogravure, and the later bromoil

Ullrich, "Unschärfe, Antimodernismus und Avantgarde," in *Ordnungen der Sichtbarkeit: Fotografie in Wissenschaft, Kuns und Technologie*, ed. Peter Geimer (Berlin: Suhrkamp, 2002), 388.

Figure 1.4: Hugo Henneberg, *Abend*, 1899 (or earlier), gum bichromate print in olive-green and black. Kunstbibliothek, Staatliche Museen zu Berlin, Sammlung Fotografie (Sammlung Matthies-Masuren). This work is reproduced under the Creative Commons BY-NC-SA 3.0 License.
Figure 1.5: Detail of Henneberg's print, showing brushwork in the clouds. Author's photograph.

process, which allowed for increased manipulation during development and printing, were celebrated as extending the expressive range of photography.[33] Alfred Stieglitz, for instance, spoke favourably of the "almost absolute control of tonality, atmosphere, and the like [that] is given to the photographer, on whose knowledge and taste depends the picture's final artistic charm."[34] The labor-intensive gum bichromate process, valued for its extreme flexibility and the soft, unified texture of the resultant prints, became especially popular in Germany and Austria.[35]

[33] Platinum printing is the most inflexible of these processes when it comes to local manipulation, its chief benefit coming in its rich tonal range. Nonetheless, as Paul L. Anderson relates, hand-sensitized platinum offered a great degree of freedom when it came to the softness or contrast of the prints produced, and there were also a variety of substances that might be added to the developer to manipulate contrast and tone. It was also frequently combined with the gum-printing process. See Paul L. Anderson, *Pictorial Photography: Its Principles and Practice* (Philadelphia: J.B. Lippincott Company, 1917), 144-159, 206-201.
[34] Alfred Stieglitz, 'Pictorial Photography,' in *Photography: Essays and Images*, ed. Beaumont Newhall (London: Seeker & Warburg, 1980), 165.
[35] Ullrich, 388.

Figure 1.6: Theodor and Oskar Hofmeister, *Einsamer Reiter*, 1903, gum bichromate print in blue. Museum für Kunst und Gewerbe Hamburg, Staatliche Landesbildestelle Hamburg, Sammlung zur Geschichte der Photographie.

Produced through the exposure of multiple layers of pigment-rich gum, which could be reworked by brush during exposure, gum-printing was a difficult process to master, but allowed photographers an unprecedented freedom when it came to the cultivation of atmospheric effects (Figs. 1.4-5). Indeed, in many gum prints, atmosphere is no longer confined to the sky, but rather seems to suffuse the entire surface of the picture. Such is the case with *Einsamer Reiter*, a gum print by the Hamburg-based brothers Oskar and Theodor Hofmeister which would later be purchased by Stieglitz.[36] In this picture, the softened lines, low lighting, and visible texture of the

[36] In an issue of *Camera Work* dedicated to the Hofmeister Brothers, Sadakichi Hartmann described this print at length, transforming the lone rider into a metaphor for the Photo-Secession itself. Sadakichi Hartmann, "The Solitary Horseman," *Camera Work* 7 (1904): 17.

paper base combine to conjure a dark, mysterious atmosphere that draws together the small horseman, the arboreal silhouettes, and darkling clouds above (Fig. 1.6).

As is perhaps already apparent from the discussion above, the notion of Stimmung became, in the context of pictorial photography, intimately entwined with the materiality of atmospheric phenomena. Although theorists such as Simmel ultimately cast Stimmung in largely subjective terms, for pictorial photographers and critics of the turn of the century, the mood of a landscape was inseparable from its weather. From the 1890s on, the writings of critics increasingly accompanied the term with qualifiers that referred less to the realm of emotions than the realm of weather. One even finds the emergence of the neologism *Luftstimmung* as a critical motif, used to describe an air that calls attention to itself as such on the surface of the picture.[37] This shift in emphasis is perhaps not surprising given the photographic medium's own material dependence on atmospheric conditions. Henry Peach Robinson, for instance, recommended the consultation of meteorological reports in the morning paper before setting out to take photographs, though, as Lady Eastlake famously noted, even apparently favourable atmospheric conditions could prove fickle.[38] Light, temperature, humidity, and air quality all had an impact on photosensitive materials, and as a result attention to the weather was an essential aspect of photographic practice, regardless of whether one intended to produce sharp or unsharp pictures. This had been true since the early days of photography. In the work of pictorial photographers circa 1900, however, this pragmatic attention began to give way to the elevation of the atmospheric as a subject in its own right, resulting in the appearance of countless photographs

[37] By 1910, the popular photography manual, *Ratgeber im Photographien,* simply defined *Luststimmung* as the "reproduction of clouds, mist, and veils of fog." Ludwig David, *Ratgeber im Photographieren: Leicht faßliches Lehrbuch für Amateurphotographen* (Halle: Verlag W. Knapp, 1910), 149.
[38] Henry Peach Robinson, *Letters on Landscape Photography* (London: Piper and Carter, 1888), 2. Also see Elizabeth Rigby Eastlake, "Photography," *The London Quartlerly Review* 101 (April 1857): 442-468.

with titles that explicitly invoked the seasons, the time of day, and weather conditions such as *Herbstnebel*, *Abendshimmel*, *Vorfrühling*, *Warmer Wintertag*, and *Vor dem Regen*.[39]

The practice of pictorial photography thus contributed to what might be described as a solidification of Stimmung into concrete atmospheric phenomena. In doing so, pictorial photographers harkened back to an important but (until recently) often overlooked legacy of German Romanticism, namely, its cultivation of an ethos of naturalist observation that extended from the morphology of plants to the clouds in the sky.[40] Goethe, for instance, was amongst the most enthusiastic readers of Luke Howard's work on the classification of clouds, and himself undertook a number of cloud studies, attempting to capture the changing forms of the sky in a variety of media including chalk, ink, pencil, and watercolour (Fig. 1.7).[41] Inspired by Goethe's efforts, the Romantic critic Carl Gustav Carus embraced this objective dimension of Stimmung in his *Letters on Landscape Painting*, suggesting that "the succession of different Stimmungen in the atmosphere (of the weather) is to the life of nature what the succession of different Stimmungen of the mind is to the life of the soul."[42] Carus thus cast Stimmung as a property that belonged as much to the life of the natural world as to the beholder—hence his coinage of the term *Erdlebenbildkunst* (earth-life-painting) to describe his ideal for landscape painting.[43]

---

[39] These titles all come from works in the Sammlung Fotografie der Kunstbibliothek, currently housed in the Müseum für Fotografie, Berlin.

[40] Robert Richard's work on Goethe's "tender empiricism" (*zarte Empirie*) represents a seminal contribution in this direction.

[41] Cloud studies were also produced by a number of Romantic painters, including Caspar David Friedrich, Johann Christian Dahl, and Carl Blechen. For more on these cloud studies, see Werner Busch, "Die Ordnung im Flüchtigen – Wolkenstudien der Goethezeit," in *Goethe und die Kunst*, ed. Sabine Schulze (Berlin: Hatje, 1994), 519-570. For more on Goethe's interest in clouds, also see Joseph Vogl, "Wolkenbotschaft," *Archiv für Mediengeschichte* 5 (2005): 69-79.

[42] "Ja man könnte wohl sagen, dass der Wechsel verschiedener Stimmungen der Atmosphäre (des Wetters) sich genau so für das Naturleben zeige,wie der Wechsel verschiedener Stimmungen des Gemüthes für das Seelenleben." Carl Gustav Carus, *Neun Briefe über Landschaftsmalerei* (Leipzig: Gerhard Fleischer, 1831), 49.

[43] For more on Carus's approach to Stimmung and its literary influence, see Timothy Attanucci, "Atmosphärische Stimmungen: Landschaft und Meteorologie bei Carus, Goethe, und Stifter," *Zeitschrift für Germanistik* 24, no. 2 (2014): 282-295.

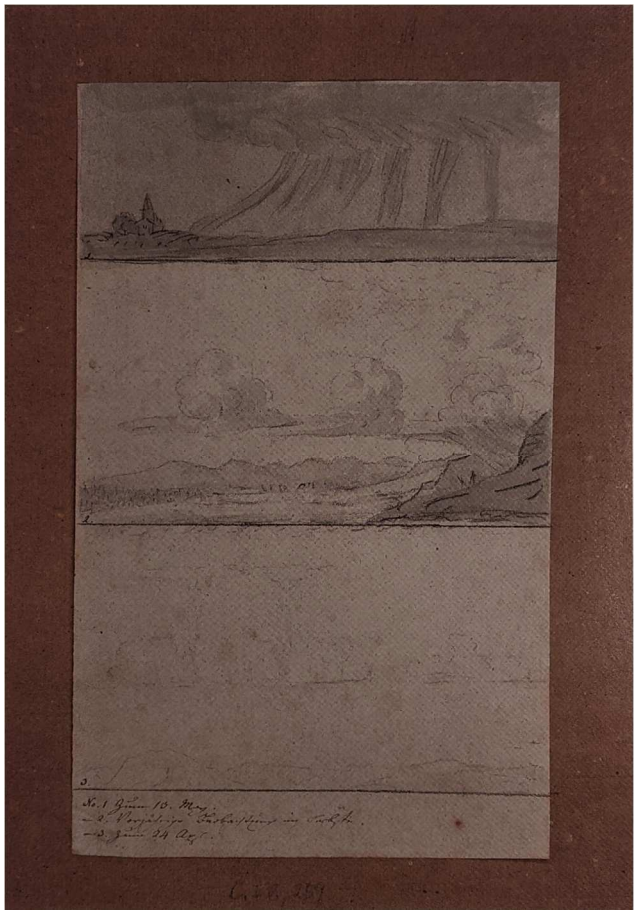


Figure 1.7: Johann Wolfgang von Goethe, three cloud studies, dated May 13th, 1820, Autumn 1819, and April 24th, 1920, black chalk, ink, and pencil on paper. From: Goethe und die Kunst. Berlin: Hatje Cantz, 1999.

This naturalist strain of Romanticism thus provided an important precedent for the concretization of Stimmung in the work of pictorial photographers and critics of the turn of the century. Indeed, echoes of Carus can be found in the photo-chemist and photographer Hermann Wilhelm Vogel's comment that the sky expressed "the soul of the landscape" in analogy to the eyes of a portrait.[44] Accordingly, many pictorialist landscapes can be distinguished by the expressive clouds that adorn their skies, a feature which is all the more notable given the considerable effort and technical finesse that photographing and printing clouds required (Figs.

[44] Hermann Wilhelm Vogel, "Ueber Landschaftsphotographie," *Photographische Mitteilungen* 4 (1866): 205. Vogel, notably, was a pioneer in the development of orthochromatic emulsion, which extended the range of sensitivity to include greens and yellows and thereby greatly contributed to the photography of clouds, making possible works such as Alfred Stieglitz's *Equivalents* series.

1.8-10).[45] Due to the extreme sensitivity of early emulsions to the colour blue, it was almost impossible to balance exposure for the landscape and sky on the same plate. Expose for the sky, and the landscape would remain dark and undefined. Expose for the landscape, and the sky would appear as a marled, unsightly, overexposed surface.[46] Solutions to this problem ranged from simply matting or painting out the sky with India ink, producing a uniform white surface; to drawing in clouds with graphite powder, which could produce relatively convincing skies; to the combination printing method most famously used by the French photographer Gustave Le Gray, which involved combining a landscape plate with a separate cloud plate onto a single print.[47] Perusing the pages of photography manuals and journals like *Photographische Rundschau* or *Deutscher Kamera-Almanach*, one finds no shortage of columns offering technical advice and arguing for the merits of one method over another.[48] In general, however, even those promoters of pictorialism who evinced a hesitance around retouching acknowledged the importance of correcting overexposed or blank skies, regarding the phenomena of the sky as crucial to the artistic merit of the photograph.

In addition to clouds, pictorial photographers were also interested in more diffuse atmospheric phenomena and their effects on a given landscape. In this respect, pictorial photography evinced a particular debt to the aesthetics of French Impressionism, which had only just begun to make inroads into the cultural landscape of Central Europe thanks to a series of

---

[45] Mia Fineman, *Faking It: Manipulated Photography Before Photoshop* (New York: Metropolitan Museum of Art, 2012), 45; Also see Dagmar Keultjes's excellent talk on the treatment of clouds in the Ernst Juhl Collection, "Let's Talk about the Weather: Negative Manipulation Techniques Used to Produce Atmosphere in Landscape Photography, 1850-1900," which can be consulted on the PiktorialismusPortal of the Museum für Fotografie.
[46] Vogel's improved emulsions significantly helped reduce the problems caused by skies, however capturing the sky and landscape in a single exposure remained a feat, and one which could be accomplished only under certain conditions (for example, when the sun shone from behind the clouds).
[47] Vogel, 204-205; Fritz Loescher, "Die Entwicklung der künstlerischen Photographen in Deutschland," *Camera-Kunst: eine internationale Sammlung von Kunst in der Neuzeit* (Berlin: Verlag Gustav Schmidt, 1903), 52;
[48] For example, see Johann Otto Treue, "Die Retusche des himmels und das Eincopieren von Wolken," *Photographische Rundschau* 10, no. 2 (February 1896): 35-38.

Figure 1.8: Theodor Hofmeister, *Abend*, 1900, gum bichromate print in brown. Kunstbibliothek, Staatliche Mussen zu Berlin, Sammlung Fotografie (Sammlung Juhl). This work is reproduced under the Creative Commons BY-NC-SA 3.0 License.
Figure 1.9: Heinrich Wilhelm Müller, *Kornfeld bei Ramelsloh, Lüneberger Heide*, 1910 (or earlier), pigment print in brown. Kunstbibliothek, Staatliche Mussen zu Berlin, Sammlung Fotografie. This work is reproduced under the Creative Commons BY-NC-SA 3.0 License.
Figure 1.10: Hauptmann (Alfred) Böhmer, *Vormorgen*, 1902, platinum print. Kunstbibliothek, Staatliche Mussen zu Berlin, Sammlung Fotografie (Sammlung Juhl). This work is reproduced under the Creative Commons BY-NC-SA 3.0 License.

exhibitions, acquisitions, and publications, as well as the work of painters like Max Liebermann, who developed a local variation on the style.[49] Of course, in the wake of the Franco-Prussian War, the reception of Impressionism in Germany was nothing if not contentious. Many of the

[49] For more on the arrival of Impressionism in Germany, see Siegfried Wichmann, *Realismus und Impressionismus in Deutschland: Bemerkungen zur Freilichtsmalerei des 19. Und beginnenden 20. Jahrhunderts* (Stuttgart: J.E. Schuler, 1964); Kern, Josef. *Impressionismus im Wilhelminischen Deutschland: Studien zur Kunst- und Kulturgeschichte des Kaiserreichs* (Würzburg: Königshausen & Neumann, 1989); and Peter Paret, *The Berlin Secession: Modernism and its Enemies in Imperial Germany* (Cambridge, Mass.: Harvard University Press, 1980).

more conservative members of the cultural establishment regarded the style as a pernicious foreign influence, poised to contaminate not only painting, but also literature, poetry, and even scientific and philosophical thinking.[50] This culturally conservative reaction to Impressionism will be explored in greater length in the third chapter of this dissertation; for now, it suffices to note that one of the particularities of the German reception of Impressionism was that it placed less emphasis on the question of unfinish than it did on the dissolution of objects into shimmering atmospheres of light, air, and colour.[51] For critics of Impressionism, this dissolution appeared as a threat to the integrity of pictorial form; for its promoters, however, this attention to atmospheric elements allowed Impressionism to be recast as a kind of *Stimmungskunst*, assimilating it, to some extent, within a longer tradition of landscape aesthetics that could be extended to include not only the Romantics, but also to revisionist understandings of 'German' masters such as Rembrandt and Dürer.

Pictorial photographers and critics counted amongst some of the most enthusiastic members of this latter camp. Though it is easy to overstate the similarities between the pictorialist print and the Impressionist canvas, it is not an exaggeration to say that the Impressionism's turn to the optical effects of light and air overturned established hierarchies of attention to provide a new model for perceiving and representing the visible world.[52] To this end, Fritz Matthies-Masuren even included reproductions of Impressionist paintings in a number of

[50] Museum directors were under constant pressure to justify acquisitions of Impressionist paintings, whether produced by French or German artists. Hugo von Tschudi was notably dismissed from the Nationalgalerie in 1909 for his acquisitions of modern French painting, despite using privately donated funds for the purpose. Lichtwark similarly had to work hard to battle nationalistic objections to the inclusion of works by French painters in the collection of the Hamburger Kunsthalle. For a good discussion of these controversies in English language scholarship see Kay; for more on the Tschudi Affair see Charlotte Klonk, *Spaces of Experience: Art Gallery Interiors from 1800 to 2000* (New Haven: Yale University Press, 2009).
[51] See Hamann; for secondary literature on this naturalistic reception of impressionism, see Ursula Peters, *Stilgeschichte der Fotografie in Deutschland, 1839-1900* (Köln: DuMont Buchverlag, 1979), 304-317; Gerbert Frodl and Verena Traeger, *Stimmungsimpressionismus* (Vienna: Oesterreichische Galerie Belvedere, 2004).
[52] Peters, 304-317.

issues of *Photographische Rundschau*, sourced from the art historian Julius Meier-Graefe's *Impressionisten* (1904). Though these photographic reproductions, reprinted through a half-tone screen, do little to convey the colouristic innovations for which their originals were celebrated, Matthies-Masuren insisted that these illustrations should nonetheless have a "stimulating effect" on amateur photographers, "to convince of the many and varied possibilities available in the viewing and representation of nature."[53] This comment would be elaborated upon in subsequent issues that explicitly took up the question of Impressionism's relationship to artistic photography. "We have increasingly become men of Stimmung (*Stimmungsmenschen*) and feel the atmospheric charm of nature (*Stimmungsreize der Natur)* much more intensively," insisted the painter Fritz Baer in one contribution, "the finite apprehension of light and air phenomena, which give nature its life and spirit, are more important than a hundred charming details."[54] More than in any isolated formal innovation, the value of Impressionism for the pictorial movement thus lay in its capacity to quicken the photographer's perception, inaugurating a new way of seeing.

Perhaps the most radical outcome of this new way of seeing was the revaluation of weather conditions previously deemed detrimental to the practice of photography. Even before the term 'photography' had become the dominant name for the process of creating images from nature through the action of light, one finds countless statements insisting on the importance of

[53] Fritz Matthies Masuren, "Unsere Bilder," *Photographische Rundschau* (1909): 152. Matthies-Masuren's comments here were made in reference to a reproduction of one of Cézanne's Mont Sainte-Victoire canvases.
[54] "Wir sind weit mehr Stimmungsmenschen geworden und fühlen auch die Stimmungsreize der Natur viel intensiver. […] Und doch war sie nur das Ergebnis der neuen Erfassung der Natur, […] des endlichen Erfassen der Licht- und Lufterscheinungen, die der Natur erst Leben und Geist verleien und wichtiger sind als hundert reizende Details." Fritz Baer, "Das Lichtbild und die Kunst," *Photographische Rundschau* (1909): 158-159. This article represented the text of a lecture that Baer was invited to deliver at the Klub der Amateurphotographie in Munich.

bright, sunny skies to quick and clear registration.[55] In the 1850s, critics even attributed the supposed superiority of American daguerreotypes to the notion that "American skies are freer from fog and clouds" than the skies of Britain and continental Europe.[56] In a public lecture from 1893, however, Alfred Lichtwark turned this formula on its head, elevating overcast skies, mist, and fog as elements to be sought after rather than shunned:

> As in landscape painting, the observation of atmospheric life (*atmosphärischen Lebens*) occurs late in amateur photography. At first one avoids the haze and aroma, because it is above all clarity and sharpness that one aspires to. Only later is the feeling for the painterly effect of veiled aerial atmospheres (*verschleierter Luftstimmungen*) awakened, and a school emerges that avoids the glaring sunlight.[57]

Lichtwark thus encouraged amateur photographers to pay close attention to the changing weather around them, evincing a particular preference for moments overcast skies and misty air, which, he suggested, could transform a scene that might otherwise appear "meaningless" into an "expressive unity" (*ausdrucksvollen Einheit*).[58] Indeed, Lichtwark even argued that this feeling for the air was particularly beneficial to the Hamburg-based amateur, given the coastal city's changeable weather. "One often hears complaints about [Hamburg's] bad weather, which brings us so little sunlight," he quipped towards the end of his lecture, "However, for the artist, amateur,

---

[55] Upon presenting the daguerreotype to the public in 1839, Daguerre even suggested that his invention would benefit from the bright light of southern regions such as Italy, Spain, and Africa, a suggestion which was soon taken up in a number of colonial expeditions to North Africa and the Middle East. Louis-Jacques-Mandé Daguerre, "Daguerreotype," in *Classic Essays on Photography*, ed. Alan Trachtenberg (New Haven: Leete's Island Books, 1980), 12.

[56] "The excellence of American pictures is evident, which is to be accounted for by several reasons. In the first place, American skies are freer from fog and clouds—from bituminous coal not being much used, the atmosphere of our cities is free from smoke, at least upon the Atlantic coasts." Anon., "Daguerreotypes at the Crystal Palace," *Humphrey's Journal of the Daguerreotype and Photographic Arts and the Sciences and Arts Pertaining to Heliography*, 15 August 1953, 139-40.

[57] "Und wie in der Landschaftsmalerei tritt auch in der Amateur-Photographie die Beobachtung des atmosphärischen Lebens erst spät auf. Zu Anfang geht man dem Dunst und Duft aus dem Weg, weil vor allem Klarheit und Schärfe angestrebt warden. Später erwacht das Gefühl für die malerische Wirkung verschleierter Luftstimmungen, und es kommt eine Schule auf, die das grelle Sonnenlicht vermeidet." Lichtwark, "Der Amateur Photograph und die Natur," in *Das subjektive Bild: Texte zur Kunstphotographie um 1900*, eds. Bernd Stiegler and Felix Thürlemann (Paderborn: Wilhelm Fink, 2012), 25.

[58] Ibid., 24.

and steady observer of nature, our weather is always good. The Hamburg amateur need only pay attention for the picturesque richness of our country to confront him every day with the most exquisite moods (*Stimmungen*)."[59]

As this last comment hints, however, there was more at stake in the turn-of-the-century embrace of atmospheric phenomena than a question of photographic style and artistic legitimacy. More than a whim, Lichtwark's decision to end his lecture on amateur photography with a paean to the changeable weather of Hamburg's environs is suggestive of the extent to which debates about photographic aesthetics were implicated in larger efforts to re-establish a meaningful connection with the natural world. Of course, the 'nature' to which pictorial photographers and critics like Lichtwark referred had long since been anything but natural. As David Blackbourn has demonstrated, the German landscape was thoroughly transformed by large scale land-reclamation and hydrological projects over the course of the eighteenth and nineteenth century, fundamentally altering not only topography, but also populations of flora and fauna.[60] Though evidence of such transformations—canals, wheat fields, the occasional suspicious cloud—could be found in any number of prints, pictorialist discourse remained committed to the category of 'nature' and its beneficial influence.

In this respect, pictorial photography might be aligned with the contemporaneous Lebensreform movement. As a corpus and a practice, pictorial photography encouraged amateurs to broaden their knowledge of the natural world and develop a posture of attentiveness to its

[59] "Man hört wohl über das schlechte Wetter klage, das uns so wenig Sonnenschein bringt. Für den Künstler, Amateur und den stetigen Beobachter der Natur ist immer gutes Wetter bei uns. Der Hamburger Amateur braucht nur aufzumerken, dann wird ihm der malerische Reichtum unseres Landes alle Tage in den ausgesuchtesten Stimmungen gegenübertreten." Ibid., 29.
[60] David Blackbourn, *The Conquest of Nature: Water, Landscape, and the Making of Modern Germany* (New York: W.W. Norton & Company, 2007).

changing moods. To this end, camera clubs and societies even organized countryside excursions for their members, offering, in addition to the chance to make photographs, some small respite from the quotidian realities of life in the city. Some of these excursions could be quite elaborate. In the summer of 1898, Matthies-Masuren hosted a two-week travel course, during participants would discuss selection of motifs, composition, and lighting in plein air.[61] To practice pictorial photography, in this sense, was to enter into an intimate relationship with nature and its elements. Photography thus acquired a restorative dimension, providing an occasion to counteract the estrangement of modern urban life through physical and spiritual immersion in what few pieces of 'nature' remained to be found.

"A so subtle thing…"

The elevated position of the atmospheric in the aesthetic discourse of pictorial photography might thus be regarded as at once a reaction against and product of the transformations engendered by modernity. Yet if the notion of Stimmung and its manifestation in atmospheric phenomena held out the promise of a reconciliation with the natural world, this promise remained vulnerable to same forces that it sought to overcome. Amongst turn-of-the-century theorists of Stimmung, it is perhaps Alois Riegl who best addressed the fraught relationship between Stimmung and the modern world. Casting the modern longing for Stimmung in existential terms, Riegl defined the concept as an "intuition of order and legitimacy over the chaos, of harmony over the dissonances, of calm over movement."[62] Beginning his discussion with a rich description of a view from an alpine peak, the art historian characterized

[61] Fritz Matthies-Masuren, "Photographische Studienreise," *Photographische Centralblatt* 4, no. 9 (1898): 196.
[62] "Diese Ahnung aber der Ordnung und Gesetzlichkeit über dem Chaos, der Harmonie über den Dissonanzen, der Ruhe über den Bewegungen nennen wir die Stimmung." Riegl, 48.

the prominence of Stimmung in modern art as a compensatory mechanism that allowed the viewer to momentarily transcend the confusing disorder of the modern human world, offering "relief, if not salvation."[63] In this respect, Riegl's reflections on the subject stand as an important precedent for later theorizations such as that of Leo Spitzer, who argued that the notion of Stimmung carried with it older connotations of world harmony, of an attunement between man and cosmos.[64] Already in 1899, however, perceptive critics such as Riegl recognized the fragility of any such attunement. "A so subtle thing is this Stimmung," wrote the art historian, "that the stirring of life in the vicinity suffices to blow it away."[65] The question thus emerges, to what extent could such a fragile construct persist within the modern urban world, amidst bustling streets and the clang of industry?

This question would become particularly consequential for the practice of pictorial photography in the first decade of the twentieth century. Given importance of Stimmung to the art-claim of pictorial photography, an affirmative response to this question would seem to have been a prerequisite for any legitimate engagement with urban and industrial themes. As Riegl's words indicate, however, to discover Stimmung within the city was no easy task. Although physicians working in the emergent discipline of psychophysics readily identified the city as an "El Dorado of Stimmungen," it is notable that the Stimmungen of which they spoke differed substantially from the lofty ideal to which pictorial photographers aspired.[66] Although pictorialists themselves expanded the category of Stimmung to accommodate concrete atmospheric phenomena, their understanding of the concept remained rooted in a Romantic

[63] Ibid., 56.
[64] See Leo Spitzer, "Milieu and Ambience: An Essay in Historical Semantics," *Philosophy and Phenomenological Research* 3, no. 1 (Sept. 1942): 1-42.
[65] "Ein so subtiles Ding ist diese Stimmung, dass eine Lebensregung in der Nähe genügt, um sie hinwegzublasen." Riegl, 48.
[66] Hellpach, 74.

tradition that associated it with unity, harmony, and attunement. By contrast, the domain of psychophysics characterized Stimmungen—in the plural—as the extremely volatile succession of moods provoked by the chaotic, oversaturated environment of the metropolis.[67] If anything, then, the psychophysical understanding of Stimmungen only added to the skepticism of pictorial photographers, the vast majority of whom simply avoided engaging with urban spaces. Pictorial photography thus remained committed to a remarkably stable repertoire sheep, meadows, and scenes from country life, which, as Ulrich Keller has pointed out, represented something of a retreat behind even the position of the French Impressionists whose work otherwise served as a model to be emulated.[68]

Nonetheless, finding a way to answer this question in the affirmative became increasingly urgent in the years leading up to the First World War, as photographers and critics wrestled with concerns that the art photography movement had reached a point of stagnation. The 1909 International Photography Exhibition Dresden marked something of a boiling point in this respect. Although pictorialism would remain a strong presence in photographic culture well into the 1930s, Vanessa Rocco has astutely pointed to this exhibition as a precursor to the calls for photographic modernism that would flourish alongside later exhibitions such as the *Deutsche Photographische Ausstellung* (Frankfurt, 1926), *Fotografie der Gegenwart* (Essen, 1929), and *Film und Foto* (Stuttgart, 1929).[69] As Rocco has argued, the exhibition's inclusion of professional photographers, photo-adjacent industrial technology, and an "atelier" in which photographic techniques were demonstrated, prefigured the heterogeneity of photo exhibitions in

[67] For a summary of this debate, see Cowan, 31-39.
[68] Keller, 4. For more on impressionist engagements with industrialisation, see Robert Herbert, *Impressionism: Art, Leisure, and Parisian Society* (New Haven: Yale University Press, 1988) and T.J. Clark, "The Environs of Paris," *The Painting of Modern Life* (New York: Alfred A. Knopf, 1984).
[69] Vanessa Rocco, "Pictorialism and Modernism at the Dresden Internationale Photographische Ausstellung," *History of Photography* 33, no. 4 (2009): 402.

the mid-20s and 30s. So far as its art photography section was concerned, however, the exhibition proved more influential in terms of its failings than its successes. Reviewers from Germany, England, and the United States were united in their frustration with this section's pompous methods of display, the repetitiveness of the selection, its insistence on the 'unsharp' as an aesthetic criterion, and finally, with its attempt to isolate art photography from the realities of industry, commerce, and an emergent mass culture. For many critics, such efforts represented the height of futility; as one reviewer wrote in *Der Photograph,* art photography quite simply could not shut out "the modern world, with its battle for existence, its contrast of poverty and wealth and the modern plague: the hateful fight of one against the other."[70] To enclose of photography in the temple of art, these critics suggested, was to ensure its irrelevance.

Despite the general consistency of pictorialist practice and aesthetics over the next decades, a close examination of major publications from the period reveals a number of intermittent attempts to engage with such criticisms from within the pictorialist movement. Here, one finds even the staunchest proponents of art photography beginning to voice similar concerns. Writing in *Photographische Rundschau* in 1909, Fritz Matthies-Masuren—who had worked, alongside Heinrich Kühn, to curate the Dresden art photography section—lamented the homogeneity of the "gloomy atmospheric pictures (*Stimmungsbilder*), murky day and evening landscapes, brooks and canals, windmills and herds of sheep, sailing ships, forests and trees" that dominated the publication's pages.[71] The influence of the Dresden exhibition on such reflections can be deduced from the pages of *Die photographische Kunst im Jahre 1909*, Matthies-Masuren's yearbook on art photography. In his introduction to the issue, Matthies-Masuren

[70] Fritz Hansen, "Wanderung durch Iphad," *Der Photograph* 37 (1909): 146.
[71] "Der düstere Stimmungsbilder, der trüben Tag- und Abendslandschaften, der Bäche und Kanäle, der Windmühen und Schafherden, der Segelschiffe, der Waldstücke und Baumgruppen." Fritz Matthies-Masuren, *Photographische Rundschau* 22 (1909): 99.

described the Dresden exhibition as the photographic event of the year and sought to grapple with some of the criticisms that circulated in its wake. While defending the quality of works included in the exhibition's art photography section, Matthies-Masuren did admit that the decision to include older, well-known pictures created the impression that, "in contrast to the enthusiastic striving of the 90s, there is silence and monotony today."[72] Though Matthies-Masuren made clear that he viewed this impression as the result of a flawed selection, rather than an accurate reflection of the state of art photography, he nonetheless felt compelled to explicitly warn his colleagues to be more inclusive in the future, arguing that "the risk of exhibiting less good pictures is lower than the risk of remaining without the prospect of offspring."[73]

In a contribution to the same issue entitled "The Beauty of the Big City as an Artistic Problem for Photographers," the critic Willi Warstat grappled with the question of stagnation in relation to the problem of the city as an aesthetic subject. Echoing earlier critiques of the Dresden exhibition, Warstat advocated for a greater engagement with urban and industrial themes, noting that, despite the fact that painters had long since tackled the "dirtiness and misery of the metropolis," one finds "extraordinarily few works of photographic art that depict something of the life of a thoroughfare, or put us in the middle of the smoke and haze-filled interior of a factory."[74] Nonetheless, Warstat remained sensitive to the problems that the city posed as a photographic subject. After all, the city's two defining characteristics, "its aesthetic

[72] "Dem begeisterten Streben der 90er Jahre gegenüber herrscht heute Stille und Eintönigkeit." Fritz Matthies-Masuren, "Photographische Kunst im Jahre 1909," *Die Photographische Kunst im Jahre 1909* 8 (1909): 3.
[73] "Die Gefahr, weniger gute Bilder ausstellen zu müssen, ist geringer anzuschlagen als die Gefahr, ohne Aussicht auf Nachwuchs zu bleiben." Ibid.
[74] "Weshalb finden wir trotzdem unter den Werken photographischer Kunst so ausserordentlich wenige, die uns etwa das Leben einer Verkehrsstraße schildern, oder die uns mitten hinein versetzen in den rauch- und dunsterfüllte Innere einer Fabrik […]. Denkt man an Parallelen aus der Kunst des Malers, so findet man ohne weiteres Suchen, das seine künstlerische Behandlung auch des Schmutzes und der Not der Großstadt wohl möglich ist." Willi Warstat, "Die Schönheit der grossen Stadt als künstlerisches Problem für den Photographen," *Die photograpische Kunst im Jahre 1909* 8 (1909), 17.

unworthiness as a phenomenon" and "its beauty as a working organization flooded with traffic and light," both presented significant problems for photographers.[75] The first forced photographers to grapple with an unsightliness that, due to the nature of their art, they could not hope to mask so well as painters.[76] The second characteristic—movement—likewise posed problems for the artistically-minded photographer. Though by this point the technical prerequisites for instantaneous photography—automated shutters and fast emulsions—were available, these technical means did little to remedy the aesthetic problems posed by subjects in motion. Like Peter Henry Emerson before him, Warstat held the firm to the conviction that not every phase of movement was suitable for artistic representation.[77] To his mind, an instantaneous photograph of an urban scene was far more likely to produce a result that was awkward and ridiculous than one that was accomplished.[78] Despite these difficulties, however, Warstat remained enthusiastic about the prospect of photographically distilling 'beauty' from the city, seeing in it a field in which artistic photography might escape stagnation to reach yet greater heights.

Importantly, both Warstat's conviction and hesitations around the potential of the city as a photographic subject emerged in conversation with ongoing debates in the domains of architecture and urban planning. Indeed, the title of his article evinces a particular debt to the architect August Endell's *Die Schönheit der grossen Stadt* (1908). With this book, Endell set out to offer a rejoinder to those who "decry the unspeakable ugliness of cities, with their wild noise,

[75] "Was jedoch gerade die modern Großstadt in ihrer Eigenart bezeichnet und ästhetisch charakterisiert is zweierlei: einmal ihr ästhetischer Unwert als Erscheinung, als rein formale Gestlatung, und ferner ihre Schönheit als arbeitende, von Verkehr und Leben durchflutete Orgnisation." Ibid., 15.
[76] To create an artistic photograph in such an environment required the photographer to do nothing less than to draw on the resources of his cultured eye and creative vision to "introduce aesthetic charm (Reiz) into the aesthetic charmlessness (Reizlosigkeit) of the modern metropolis's form." Ibid., 16.
[77] To support this assertion, Warstat resorted to no less venerable as source than Lessing's Laocoon essay.
[78] Ibid., 17-18.

their filth, their dark courtyards, and their thick murky air."[79] To do so, he guided his readers on a journey through the city that might be described as impressionistic in more than one sense. Not only did the architect adopt a highly phenomenological perspective, his prose also evinces a particular preoccupation with the subtle variations of atmospheric phenomena that animate built environment. In this respect, Endell, like the pictorial photographers of the 1890s, was highly influenced by the French Impressionists, to whom he credited the discovery of "curtains of air (Luftschleier)."[80] The movements of clouds, rising mist and lingering fog, the play of dust in the air, and effect of rain on asphalt all emerge as elements which transform the city into fairy tale land as worthy of observation as any pastoral landscape. Indeed, Endell repeatedly makes this analogy quite explicit. "Here too is nature, is landscape," the architect wrote, "the changing weather, the sun, the rain, and the fog all create, out of the hopeless ugliness, a strange beauty."[81] The architect thus endowed the atmospheric with a redemptive dimension, insofar as it not only possessed the power to transform the city, but also brought access to the natural world within the reach of those who lived the city, a dimension of his project which would be extended in the later publication, *Spaziergänge eines Naturbeobachters* (1928).[82]

---

[79] "Man schilt die unsägliche Hässlichkeit der Städte mit ihrem wüßten Lärm, ihrem Schmutz, ihrem dunklen Höfen und ihrer dicken, trüben Luft." August Endell, *Die Schönheit der grossen Stadt* (Stuttgart: Strecker und Schröder, 1908), 21.

[80] Ibid., 45. Endell included illustrations by Max Liebermann and Claude Monet in his book, but the relative lack of exposure to Impressionist canvases in Germany is perhaps indicated by the somewhat strange example he chooses to discuss these Luftschleier—Manet's asparagus, which arrived in Berlin with the Bernsteins at some point after 1900 and was purchased by Max Liebermann from Paul Cassirer on April 6, 1907, see Gert von der Osten, "Manets Spargelbündel 'bei Liebermann' jetzt in Köln: dem Andenken an Erwin Panofsky," *Wallraf-Richartz-Jahrbuch* 31 (1969): 139.

[81] "Auch hier ist Natur, ist Landschaft. Das wechselnde Wetter, die Sonne, der Regen, der Nebel formen aus dem hoffnungslos Hässlichen seltsame Schönheit." Ibid., 48. Interestingly enough, Endell proposes a very different notion of nature in the city than that found in the contemporaneous debate about the creation of Volksparks in Berlin, rather than advocate the creation of green spaces, Endell argues for a shift of perception.

[82] The architect opens this book insisting on the accessibility of this art of urban nature observation to that of poetry (the appreciation of which demands lengthy education) and music (which requires that one has either financial resources or the ability to play piano). August Endell, *Spaziergänge eines Naturbeobachters* (Berlin: Verlag der Gartenschönheit, 1928),7-8.

That pictorial photographers would seize upon the transformative power of atmospheric effects is perhaps not surprising, since this dimension was already present in the approach to landscape photography advocated by critics such as Lichtwark. Patient attention to the optical effects of light and air was, as we have seen, an important component of pictorial photography, and, in approaching the city, photographers brought this sensitivity to the peculiar atmospheric conditions that characterized Germany's growing urban centers. Early forays in this direction can in fact be observed as early as the mid-1890s. Though such pictures certainly remained an exception rather than a norm, they occasionally garnered high praise. In the October 1896 issue of *Photographische Rundschau*, for instance, a harbour picture by the amateur photographer Alfred Böhmer was awarded the pride of place, appearing as a hand-pulled photogravure reproduction on heavy-weight paper (Fig. 1.11).[83] Unlike the solitary landscapes for which Böhmer was better known, this picture presented a view of Hamburg's busy commercial port. Taken from slightly elevated position the bank of the Elbe, its composition is dominated by the angular silhouettes a jutting pier and a number of distant ships, which seem to alternately rise and sink into the murky air of the horizon.

Ernst Juhl, who then served as the periodical's picture editor, was fond enough of this photograph that he later expressed a desire to see it enlarged and hung on a wall, an ennobling method of display favoured by pictorial photographers like Heinrich Kühn and Hugo Henneberg

[83] Each issue of *Photographische Rundschau* included one such photogravure reproduction, which could be removed from the periodical and displayed as a work of art. The inclusion of such high-quality reproductions in periodicals was an important component of pictorial photography's attempt to establish itself as a fine art. The inclusion of photogravure prints was typical of publications such as the *Wiener photographische Blätter*, *Die Kunst in der Photographie*, and *Camera Work*, which were even more elaborate than *Photographische Rundschau*, which restricted itself to a relatively modest single plate.

Figure 1.11: Hauptmann (Alfred) Böhmer, *Hamburger Hafen*, 1896, hand-pulled photogravure in *Photographische Rundschau* 10 (1896).

(if not Böhmer himself).[84] In the October 1896 issue, Juhl offered the following description of Böhmer's picture:

> Today's issue shows a photograph of the port of Hamburg, which has nothing in common with the well-known, much-purchased postcard views [of the same theme]; the heavy, smoky, misty air gives a singular view of the Elbe on a semi-transparent foggy day; the distant factories on the opposite bank and the city beyond it almost disappear into the damp atmosphere, and the smoke of a steamer passing by in the foreground envelops a noble, three-mast ship with its soft, rising clouds in a painterly manner. The slow-moving, oily water in the foreground, the black silhouettes of the powerful duckdalben, all combine to form a "picture" (*Bild*) of the great, busy, hazy world-port, and thus achieve a unified impression (*Gesamteindruck*), the effect of which no artistically inclined beholder could deny.[85]

[84] Ernst Juhl, "Hauptmann Böhmer," *Photographische Rundschau* (1901): 218.

[85] "Unsere heutige Nummer zeigt eine Aufnahme des Hamburger Hafens, welche mit den bekannten, viel gekauften Ansichtsbildern keinerlei Gemenschaft hat; die schwere qualmige Wasserluft giebt den eigenartigen Anblick der Elbe an einem halbsichten Nebeltage; die fernen Fabriken gegenüber liegenden Ufers und die diesseitige Stadt

Evident in this effusive description is the critic's fascination with the port's dense atmosphere, which here appears as a kind of connective tissue, uniting the disparate elements of the scene into a single expressive unity. Later in the same article, Juhl relates that Böhmer spent two days patiently studying the area, its light, air, and fog, before returning to expose his plate when the atmospheric conditions suited his plan.[86] For Juhl, it was precisely this patient attention to atmospheric conditions that separated Böhmer's work from postcard views of the same subject, allowing the photographer to elevate his subject above the banality of commerce and industry.

Discussing a similar approach to atmospheric conditions in the work of Alfred Stieglitz and the New York Photo-Secession, Ulrich Keller has suggested that such a turn to atmospheric conditions constituted a "pastoralization" of the city, in which the harsh realities of the urban life are cloaked in a veil of picturesque effects.[87] While the notion of veiling is certainly evident in the appeal to weather effects articulated in the writings of August Endell, what is perhaps most notable about Juhl's description is the critic's heightened attention to the material composition and sources of this atmospheric density, drawing attention to industrial elements—steamships, distant factories—that might otherwise be lost in the picture's hazy horizon. Equally striking is the way in which clouds, mist, fog, and smoke begin to blur, challenging any easy distinction between the natural and industrial. Indeed, this intermingling is intensified in the photogravure reproduction. A comparison with a matt-albumin print from the same negative in Juhl's

---

verschwinden fast in der feuchten Atmosphäre und der Qualm eines im Vordergrunde vorüberfahrenden Schleppers hüllt einen sttatlichen Dreimaster in seine weich aufwallenden Wolken. Das träge, wie Oel sich wiegende Wasser des Vordergrundes, die Schwarzen Schattenrisse der machtigen Duc d'Alben, alles vereint sich zu einem 'Bild' des grossen, gestchäftigen, dunstigen Welthafens und erzielt so einem Gesamteindruck, dessen Wirkung sich kein künstlerisch veranlagter Beschauer wird entziehen können." Ernst Juhl, "Die Abteilung für künstlerische Photographie," *Photographische Rundschau* 10 (October 1896): 295.

[86] Ibid., 296.

[87] Keller, 10.

Figure 1.12: Hauptmann (Alfred) Böhmer, *Hamburger Hafen*, 1895, matt-albumin print (printed by Rudolf Dührkoop). Kunstbibliothek, Staatliche Museen zu Berlin, Sammlung Fotografie (Sammlung Juhl). This work is reproduced under the Creative Commons BY-NC-SA 3.0 License.

collection shows a notable increase in density, especially in the sky, where the clouds begin to take on a distinctly smoky cast (Fig. 1.12).

Rather than a simple pastoralization, then, we might consider this harbour picture as an attempt to come to terms with the material realities of the urban environment in pictorial terms. In this respect, it is significant that the picture was produced at a moment in which Hamburg's residents, health officials, and legislators were beginning to confront the environmental consequences of the city's growth over the last quarter of the nineteenth century, especially after

the expansion of industry that followed its entry into the Customs Union in 1888.[88] In fact, the city's rise as a center for art photography neatly coincided with its steadily worsening atmospheric conditions. Discussing turn-of-the-century Hamburg in the first section of *The Magic Mountain*, Thomas Mann did not miss the chance to comment on the environment produced by this thriving port, which he described as the "damp atmosphere of global shopkeeping and prosperity," filled with the "fumes of the harbour, of coal and tar, [and] the pungent odors of the world's produce piled high."[89] As though the path of commerce had brought pollution in its wake, the city placed next to trading partner, London, as one of the foggiest cities of continental Europe.[90] Commentators frequently noted the visible presence of a layer of black smoke hanging over the city, and researchers even turned to photography to document the phenomenon (Fig. 1.13).[91] Meanwhile, residents of the city center complained of the impossibility of opening their windows because of the dust and soot in the air (never mind sitting in their gardens), while those who lived in working-class districts reported attacks of breathlessness at night.[92] Such complaints were frequently raised to the city's Citizen Assembly, but, as Richard Evans and Frank Uekötter have noted, legislators had little success implementing anything more than voluntary measures for the regulation of industrial emissions.[93] The murky

[88] Richard Evans, *Death in Hamburg: Society and Politics in the Cholera Years* (New York: Penguin, 2005), 121, 125.
[89] Thomas Mann, *The Magic Mountain*, trans. John E. Woods (New York: Vintage, 1996), 29.
[90] Dr. Kister, "Bericht über die in Hamburg ausgeführten Rauch und Rußuntersuchungen," *Gesundheits-Ingenieu* 32, no. 51 (18 Dec. 1909): 850.
[91] Karl Scheffler, *Der junge Tobias: Eine Jugend und ihre Umwelt* (Munich: Verlag Heinrich Ellermann, 1962), 21; Kister, 848.
[92] See Evans, 122. Kister's report in *Gesundheits-Ingenieur* also notes that the death due to (non-tubercular) respiratory illnesses in Hamburg increased from 1308 to 1918 deaths per year between the years of 1894 and 1907 (see Kister, 844).
[93] Evans, 125; Frank Uekötter, *Age of Smoke: Environmental Policy in Germany and the United States, 1880-1970* (Pittsburgh: Pittsburgh University Press, 2009), 66.

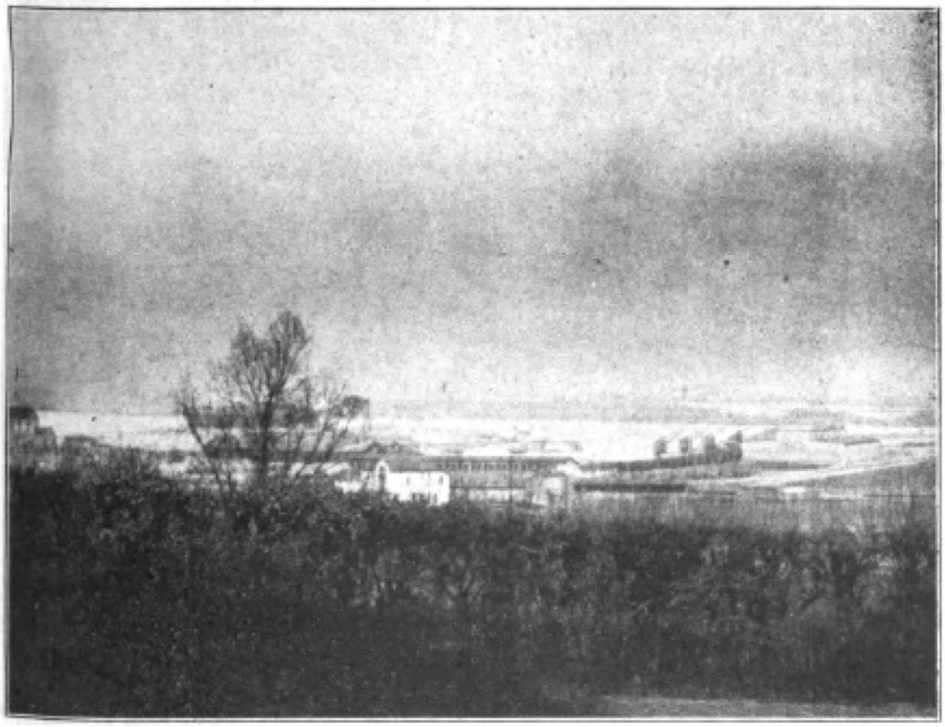


Fig. 25.

Figure 1.13: Photograph of Hamburg taken from Harburg, showing a "thick veil of smoke," reproduced in Albert Reich's *Leitfaden für die Rauch- und Rußfrage* (1917). The photograph originally appeared as one of series of photographs documenting the polluted air surrounding Hamburg in a 1909 issue of *Gesundheits-Ingenieur*.

atmosphere that elevated Böhmer's picture above the efforts of commercial photographers was a visible reminder of the costs that accompanied the city's growth and prosperity.

It would be thus incorrect to cast such atmospheric treatments of urban spaces as evasive or escapist. Instead, the project that emerges from this effort might be better characterized an attempt to transform the harmful by-products of modernity into an aesthetic surplus. The tradition of Stimmung proved particularly helpful in this respect. Once the meaning of the term had stretched to accommodate atmospheric phenomena like mist and fog, only a small step was required to extend it to include those brought about by industrial emissions. Indeed, the concrete mechanics of air pollution themselves facilitated this extension, since, as

scientists were quick to note, the coal and soot impacted weather patterns by contributing to the formation of fog, such as that Lichtwark celebrated in 1893.[94] The language of Stimmung thus provided a legible framework through which to engage with a troubling new reality, especially when the phenomena of pollution was treated in the context of subjects—like the harbour picture—with a long history in the visual arts. Indeed, a selection photographs featuring the port of Hamburg would be showcased in the April 1912 issue of *Photographische Rundschau*, which constituted the periodical's most explicit engagement with the built environment of the industrial city before the late 1920s.[95] If legislation proved unable to effectively ameliorate the problem of the 'smoke plague,' such efforts, at least, suggested the possibility of, to some extent, domesticating it within an aesthetic tradition, harkening back to the closing words of Riegl's essay—that an art of Stimmung could provide "relief, if not salvation."[96]

This, of course, is not to celebrate such efforts as progressive in any political sense of the term. Instead, the poetic treatment of industrial pollution found in pictures such as Böhmer's was premised on a certain degree of removal. Stimmung, as Riegl argued, emerges only from calm and a distant view, and in the case of Böhmer's harbour picture, this distance was as much social as aesthetic. Though the thick air of the port functions as the pictorial agent of distance, to apprehend it with calm—to apprehend it in primarily aesthetic terms at all—was a privilege that many residents of the city could not share. Indeed, the smoke and fog of the city remained threatening even amongst the relatively privileged class to which the large majority of pictorial

[94] Kister, 842.
[95] Introducing the selection, Matthies-Masuren leaned heavily into the language of Stimmung: "the second part of this pictures in this issue contains the most varied atmospheric pictures (*Stimmungsbilder*) of the Port of Hamburg, from which one can infer the inexhaustibility of this painterly and moving subject." See Fritz Matthies-Masuren, "Zu den Bildern," *Photographische Rundschau* 12 (1912): 114. Heinrich Kühn, Hugo Henneberg, and Hans Watzek also created photographs of Hamburg's harbour in the latter half of the 1890s.
[96] Riegl, 56.

photographers belonged. As photographer Wilhelm Bandelow observed, prizes for art photography generally went to the "most beautiful, airiest, brightest summer landscapes, bathed in strong light, bright on bright, with compelling, illuminating sunlight."[97] Here, pictorial photography's alliance with the Lebensreform celebration of fresh air and light once again becomes evident. Bandelow himself viewed this state of affairs as quite in order, coming out strong against the cultivation of heavy, shadowy, atmospheric effects.[98] Although a relatively minor internal debate within pictorialism, this privileging of bright over murky atmospheres is indicative of the degree of resistance encountered by any attempt to engage with the dark and foreboding atmospheres of modernity. Although the language of Stimmung allowed smoke and fog to be recast as a vehicle for building an aesthetic relationship with a changing environment, this conciliatory project would remain a controversial one, characterized by a series of intermittent attempts that only occasionally punctured the idyllic world of clouds, meadows, and sheep that would remain dominant well into the 1920s.

Modernism's Murky Tincture

From the perspective of photographic modernism, it is easy to dismiss the stubborn persistence of pictorialism as a force of inertia to be overcome. Heavily influenced by the impatience of the interwar generation of photographers and critics towards the art photography movement, standard histories of photography tend to exaggerate the gulf between pictorialism

[97] Wilhelm Bandelow, "Das Handwerkzeug des Kunstphotographen," in *Camera-Kunst: eine internationale Sammlung von Kunst in der Neuzeit*, ed. Ernst Juhl (Berlin: Verlag Gustav Schmidt, 1903), 72-73.
[98] "But please no heaviness, no tempers, no impenetrable shadows!" Ibid., 73. Interestingly, one of the most common criticisms of the gum printing process from within pictorialist discourse focused on its tendency to suppress middle-tones, which could result in prints with regions of flat, dark shadows—unless the photographer took care to compensate for this effect by overlaying multiple layers for light, middle, and dark tones. See Bandelow, 82; Loescher, 21; and Robert Demachy, "The Gum Print," *Camera Work* 7 (1904): 34.

and modernism, as though nothing but a few derivative pictures lay between the art photography movement of the 1890s and the emergence New Objectivity and the New Vision in the mid-1920s. As we have seen, however, the apparent homogeneity of pictorialist production during this interval in fact concealed a number of intermittent, but increasingly frequent, attempts to engage with the realities of industrial modernity. During this period, the posture that pictorialism adopted towards photographic modernism also became increasingly conciliatory, walking a delicate line between convention and innovation as it attempted to remain responsive to both new developments within the field of photography and an emergent mass culture. Though this conciliatory approach may have excluded late pictorialists from a canon constructed around criteria of originality, it nonetheless played an important role in disseminating modernist ideas to a wider audience.

Indeed, as we have seen, the writings and editorial efforts of pictorialists in the twentieth century suggest that at least some of them were highly conscious of this dynamic. Consider, for instance, this curious statement from Matthies-Masuren, which appeared in the critic's introduction to a 1906 issue of *Camera Work* dedicated to the work of the Viennese pictorialists Heinrich Kühn, Hugo Henneberg, and Hans Watzek: "It is one of the ironies of fate that she frequently permits persons of merely mediocre ability to become instrumental in spreading new ideas by blending the strange and new with the old and familiar, and by administering this mixture to the public in slowly increasing doses, the public thus taking in a diluted form the wine which, in its pure state, was too strong for it."[99] Although Matthies-Masuren by no means suggests that these photographers should be considered mediocre, his words are telling in the context of *Camera Work*, which by this point had already begun to attack

[99] Fritz Matthies-Masuren, "Hugo Henneberg—Heinrich Kühn—Hans Watzek," *Camera Work* 13 (1906), 21.

the painterly aesthetics of the gum-printing technique. Matthies-Masuren sought to engage with these criticisms seriously, but he took exception to any form of excess, which he perceived as much in the indiscriminate celebration of atmospheric effects as in their blanket dismissal.[100] If excess was a sign of the dilettante, what was wanting was a kind of *juste milieu*, a middle path that could mediate modern and modernist innovation in a more accessible form. It is in this respect that E.O. Hoppé's interwar work would prove so exemplary, and nowhere more so than in his treatment of the urban and industrial landscape.

Before returning to Hoppé, however, it is worth dwelling a moment longer with Matthies-Masuren's activities as an editor, for it is in the pages of *Photographische Rundschau* that this conciliatory posture towards modernism and modernity can perhaps best be appreciated. Matthies-Masuren retained his position as the periodical's leading editor well into the 1930s, and in this capacity presided over number of changes to both its content and visual form. Beginning in the 1910s, the periodical increasingly included urban pictures by British and American photographers, departing from its programmatic focus on the works of German photographers.[101] Following a pause occasioned by the First World War, the periodical also began to include more and more articles devoted to scientific photography, as well as contributions from a new generation of modernist critics and photographers, whose works began to appear side by side with those of an older generation of pictorialists.[102] This cohabitation of the page was furthermore

[100] "Critics unjustly object to a good many effects—as, for instance, certain chiaroscuro ones—as being painter-like, which they would find perfectly legitimate if they were to approach them from the standpoint of a photographer." Ibid., 22.
[101] Alfred Stieglitz was notably not included, but his works did appear in other important periodicals and were collected by Ernst Juhl. There are a number of possible reasons for Stieglitz's exclusion, ranging from the famously high figures at which he priced his work to his rather aggressive insistence on *Photographische Rundschau*'s "antiquated" selection and "insignificance" in the years following the First World War.
[102] In its inclusion of articles on scientific photography, *Photographische Rundschau* harkened back to its roots in the 1890s, when the periodical covered both developments in scientific photography (overseen by Richard Neuhauss) and art photography (overseen by Ernst Juhl).

reflected in slow but progressive changes to the periodical's appearance. In 1928, *Photographische Rundschau* adopted a design scheme that combined its habitual Jugendstil-type with thick horizontal bars and titles in a sans-serif font—known at the time as 'Groteskschriften'—that readily evince the influence of László Moholy-Nagy's innovative design for the Bauhausbücher series. It would finally abandon its Jugendstil-type in 1929, adopting a more modern aesthetic, which, despite this late date, remained bold in the context of a print culture that remained widely committed to Fraktur scripts. The gradualness with which this transformation took place, however, is noteworthy insofar as it exemplifies the circumspection that pictorialists exhibited in their negotiation with new aesthetic trends.

Circumspection and caution also typified many of the articles contributed by pictorialists during the 1920s. By this time, the periodical that had once been the privileged organ of camera clubs had become something closer to an open forum for debate. We thus find Heinrich Kühn, that old master of the gum print, taking up the question of the sharp versus unsharp and addressing his technical writings to readers who might pursue work either direction.[103] On the other hand, one also finds the question of the metropolis once again treated as uncharted territory (Fig. 1.14). In 1927, the Berlin-based photographer M. Curt Schmidt, who specialized in atmospheric bromoil prints of his home city, reiterated Warstat's lament about the paucity of photographs engaging urban themes. Framing a position already almost two decades old as a new proposition, Schmidt insisted that if the amateur photographer wanted to achieve "passably picturesque shots" of urban themes, then "he must pay *even more* attention to the

[103] Heinrich Kühn, "Scharfzeichner—Raumzeichner," *Photographische Rundschau* 65 (1928): 353-355.

Figure 1.14: M. Curt Schmidt, *Jungfernbrücke*, 1921, bromoil print. Kunstbibliothek, Staatliche Museen zu Berlin, Sammlung Fotografie. This work is reproduced under the Creative Commons BY-NC-SA 3.0 License.

atmospheric than he would for landscape photography."[104] Like Endell, Schmidt viewed the atmospheric both as a veil that might disguise otherwise unsightly elements or technical errors caused by the conditions of working in urban spaces, as well as an "important pictorial element" in its own right, and like Lichtwark, he argued that one was best advised to forego conditions of

[104] "Will der Amateur in der Großstadt seine Motive suchen, so muss er, will er zu leidlich bildmäßigen Aufnahmen gelangen, noch mehr als bei Landschaftsaufnahmen auf das Atmosphärische achten." M. Curt Schmidt, "Großstadt-Aufnahmen," *Photographische Rundschau* 64 (1927), 102.

bright sunlight.[105] If Schmidt's text is presented here, it is less to insist on his contribution to the debate on urban photography than to demonstrate the degree of redundancy that characterized this conversation. Rather than a continuous development, what one finds is a series of stillborn attempts accumulating over decades, attesting to nothing so much as the slow pace with which modern themes and aesthetics became acceptable to broader audience.

It was within this context that E.O. Hoppé's photobook *Das romantische Amerika* (1927) appeared. Although Hoppé's base of operations was in London, the photographer remained closely connected with photographic circles in Central Europe.[106] Hoppé in fact became something of a mediator between photographers in Great Britain and Germany, exhibiting the work of German photographers in London and curating selections of British art photography for the German public, in addition to his regular contributions to periodicals on either side of the channel.[107] The Berlin-based publishing house that commissioned Hoppé's photographs, the Ernst Wasmuth Verlag, occupied a similar position between the national and international. Primarily devoted to the field of architecture, Wasmuth had previously published Hermann

[105] "Dunst, Nebel, Regen-, Schnee- und Tauwetter sind sehr sehr wichtige Bildelemente und vermögen geradezu Wunderlinge zu tun." Ibid.
[106] He also kept a country house in Austria.
[107] Hoppé organized an exhibition of German pictorial photographers in London in 1908, which included the work of Theodor and Oskar Hofmeister, Rudolf Dührkoop, ad Hugo Erfurth, presented his own work in a solo show in Munich in January 1909, and was responsible for the selection of British photography at the 1909 International Photographic Exhibition in Dresden (see Prodger, 12). A selection of his articles presenting British work to Germans and German work to English audiences includes E.O. Hoppé, "Einige englische Kunstphotographen," *Die photographische Kunst im Jahre 1905* (Halle: Wilhelm Knapp 1905), 135-146; "'Royal' und 'Ring,' die zwei grossen Londoner Herbstausstellungen," *Photographische Mitteilungen* 43 (1906): 562-567; "Englische Lichtbildkunst 1905-06," *Die Photographische Kunst im Jahre 1906* (Halle: Wilhelm Knapp, 1906): 49-70; "Kunstphotographisches aus England: Gedanken eines Unparteiischen," *Die Photographische Kunst im Jahre 1908* (Halle: Wilhelm Knapp, 1908); "Stillstand oder Rückhang? Zur englischen Lichtbildnerei 1908-09," *Die Photographische Kunst im Jahre 1909* (Halle: Wilhelm Knapp, 1909): 20-26; "Englische Lichtbildkunst, 1910-11," *Die Photographische Kunst im Jahre 1911* (Halle: Photographisches Verlagsgesellschaft, 1911): 45-50; "Notes on Some Examples of the German Pictorial School," *The Amateur Photographer* 47, no. 11 (February 1908): 131-135; "Rudolf Dührkoop's Aims & Methods in Photography," *The Photographic Journal* 49, no. 2 (1908): 96-103; "Die bildmäßige Behandlungs Londons," *Deutscher Camera Almanach* 5 (1910): 15-20; and "Einige Bemerkungen zur Landschaftsphotographie," *Deutscher Camera Almanach* 9 (1914): 113-120.

Mutheisus's *Das englische Haus* (1904-5), a book which introduced German audiences to the Arts and Crafts movement and contributed to the spread of the country house as a model for development amongst reform-minded architects, as well as the important portfolio *Frank Lloyd Wright: Ausgeführte Bauten und Entwürfe* (also known as the 'Wasmuth Portfolio,' 1910-11), which introduced a notably functionalist version of the architect's work to European audiences. The house's journal *Wasmuths Monatshefte für Baukunst* (1914-1932) further cemented Wasmuth's position as a conduit that brought developments from around the world into conversation with those in Germany.

What most distinguished the Ernst Wasmuth Verlag, however, was its commitment to quality in the reproduction of images, a priority that the publisher shared with pictorial photographers' attention to papers, printing methods, and presentation. This was nowhere more apparent than in the publishing house's Orbis Terrarum series, conceived as a series of large-format photobooks that would introduce readers to the landscapes, built environment, and cultures of the world through images commissioned from renowned photographers. *Das romantische Amerika* is typical of the publisher's ambitions for the series. Printed on folio-sized, heavy-weight, off-white paper, the book featured original over three hundred photographic illustrations, each reproduced on its own page in high-quality rotogravure.[108] The first edition featured a dust jacket with a mounted illustration of one Hoppé's most famous photographs (a view of Manhattan through the steel cables of the Brooklyn Bridge), a blue linen cover with debossed and gilded lettering, and a slipcase to store and protect the ensemble (Fig. 1.15). The publisher thus went to some lengths to ensure that the book would be received as an object of

[108] The printer responsible for these reproductions was the Berlin-based Rotophot AG.

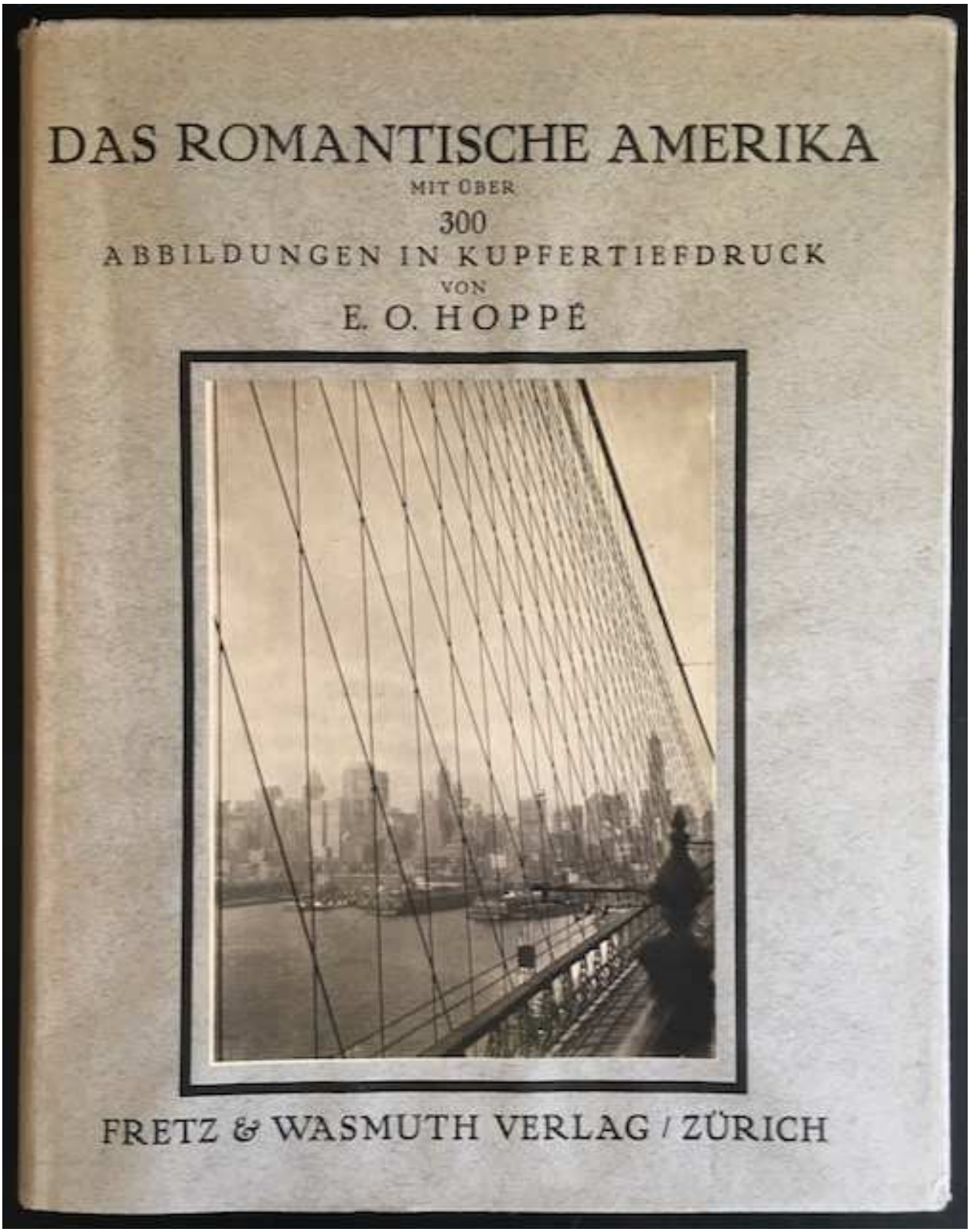


Figure 1.15: The cover of the German-market edition of E.O. Hoppé's *Das romantische Amerika* (1927), featuring a mounted rotogravure print Hoppé's photograph of Manhattan viewed from the Brooklyn Bridge.

quality. Indeed, it also existed in an even more lavish edition published simultaneously by Wasmuth's sister-press, the Atlantis-Verlag, which boasted half-parchment binding and gold-leaf ornamentation.[109]

The images that appeared within this frame presented readers with a series views taken from across the United States. Hoppé toured the country three times between 1919 and 1926, producing several thousand photographs, from which his publisher ultimately selected some 304 images for publication.[110] The photographer's previous collaboration with the Wasmuth Verlag, on another Orbis Terrarum volume entitled *Picturesque Great Britain* (1926), had focused largely on small towns and landscapes. By contrast, *Das romantische Amerika* included a heterogenous selection of images showcasing the continent's national parks, estates, industrial sites, and cities. The architect Ludwig Hilberseimer singled out this diversity for praise in one review, noting that unlike many other depictions of the United States, Hoppé's book succeeded in presenting an America that was "romantic above all through [its] unheard of contrasts," bringing together "all conceivable contradictions between nature and civilization."[111] The book's urban and industrial photographs, however, were undoubtedly those that attracted the most interest, both contemporaneously and retrospectively.

Far from a coincidence, the attention that these photographs received was part of a calculated marketing plan. As Brian Stokoe has pointed out, Hoppé was nothing if not a savvy businessman; unlike Alfred Stieglitz, he had felt no embarrassment around photography's dual

[109] The regular edition was priced at 26 Reichsmarks, and the luxury edition at 35 Reichsmarks. This is equivalent to approximately 125 USD and 167 USD.
[110] Prodger, 16; Brian Stokoe, "The Exemplary Career of E.O. Hoppé: Photography, Modernism, Modernity," *History of Photography* 38, no. 1 (2014): 81.
[111] Ludwig Hilberseimer, "Das romantische Amerika," *Sozialistsche Monatshefte* 34, no. 6 (1928): 558.

identity as an art and an industry.[112] In the months leading up to and following the release of the *Amerika* book in September 1927, Hoppé published a series of articles on industrial photography with titles such as "Poesie der Technik," "Die Romantik der Technik," "Stahl und Dampf," and "The Romance of Steel and Cement," and images from the book were furthermore reprinted in a wide variety of periodicals, including engineering journals, women's magazines like *Die Dame*, and popular science publications like *Die Koralle*.[113] An exhibition of Hoppé's American photographs was also held in the atrium of the former Kunstgewerbemuseum in Berlin, likely on suggestion of the Wasmuth Verlag. This exhibition was apparently made enough of a splash to merit a mention in the *Berliner Illustrirte Zeitung*, which published a full-page reproduction of Hoppé's photograph of the Ford factory in Detroit accompanied by a caption reading "the forest of the factory-city: an artistic photograph of symbolic force" (Fig. 1.16).[114]

With this marketing campaign, Hoppé and his publisher sought to capitalize on the German public's growing enthusiasm for industrial images, a phenomenon that was influenced as much by Weimar-era Americanism as it was by nationalist discourse around the rebuilding of German industry (which furthermore made ample use of photography and film). As Hilberseimer's review indicated, the built environment of the United States had already featured in innumerable publications, one of the most notable of which is the architect Erich Mendelsohn's *Amerika*, whose innovative layout heightened the verticality of the country's

[112] Sally-Ann Baggott and Brian Stokoe, "The Success of a Photographer: Culture, Commerce, and Ideology in the work of E.O. Hoppé," *Oxford Art Journal* 26, no. 2 (2003): 22-46.
[113] In addition to the article in *Scherl's Magazin*, these include E.O. Hoppé, "Poesie der Technik," *Die Koralle* 3, no. 6 (Sept. 1927): 288-291; "Die Romantik der Technik," *Wissen und Fortschritt* 2, no. 5 (1928): 135-138; "Stahl und Beton," *Münchner Illustrierte Presse*, no. 49 (1927); "Stahl und Dampf," *Die Brücke: Werksnachrichten der Firma C.H. Jucho Dortmund* 4 (1928): 74-77. Images also appeared in *Die Woche* (1926): 1843; *Die Dame* 54, no. 24 (1. Aug. 1927), 5ff; *Die Dame* 54, no. 25 (2. Aug. 1927): 8ff; and *Die Dame* 55, no. 23 (1. Aug. 1928), 7.
[114] *Berliner Illustrirte Zeitung* 46 (13 Nov. 1927): 1843.

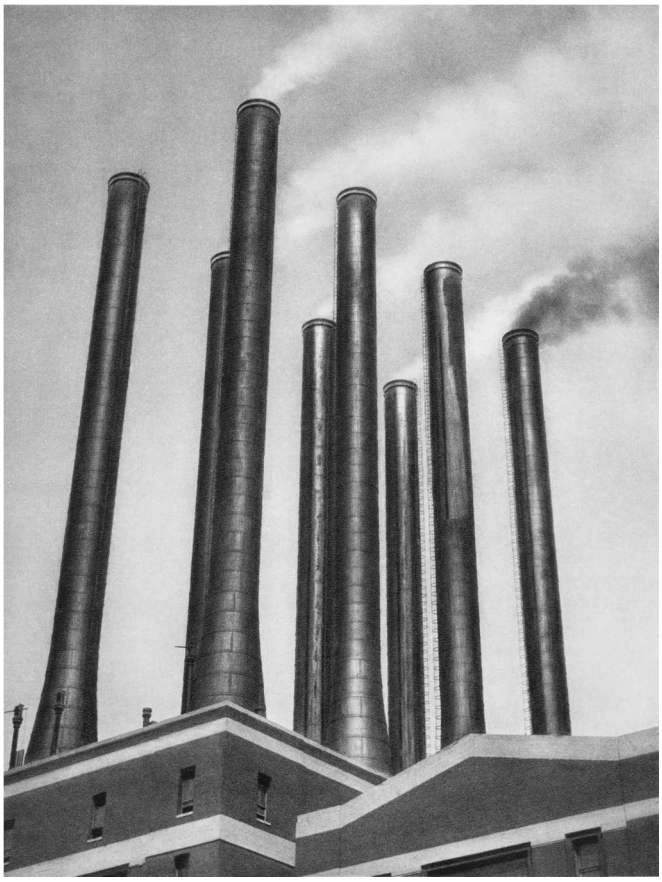


Figure 1.16: "The forest of the factory-city," a photograph of the Ford factory in Detroit by E.O. Hoppé, reprinted in the *Berliner Illustrirte Zeitung* in November 1927.

urban and industrial architecture. By the end of the decade, the demand for images of industry was so great that some publishers even resorted to soliciting readers for contributions.[115] Tapping into this enthusiasm, Hoppé sought to secure an audience that overlapped with but extended beyond the middle-class audience addressed by the pictorialist periodicals to which he regularly contributed. By any metric, this effort was a smashing success. Wasmuth sold 20,0000 copies of the first German edition alone, a figure that rose to over 100,000 when taking into account sales of the simultaneously published English and French editions.[116]

[115] Such a call was printed on the dustjacket of *Das Werk: Technische Lichtbildstudien mit Vorbermerkung von Eugen Diesel* (Königstein im Taunus and Leipzig: Karl Robert Langewiesche, 1931).
[116] Graham Howe, "E.O. Hoppé's Pioneering Business Models in Photographic Practice," *PhotoResearcher* 23 (2015): 59.

If Hoppé capitalized on this enthusiasm, he nonetheless offered a very different product. In keeping with its title, the book presented the strange and unfamiliar built environment of the United States through a lens informed by both the legacy of Romanticism and aesthetic criteria of pictorialism. In his autobiography, Hoppé relates that set out to avoid the bustle and cacophony common to interwar representations of the city: "Most of the pictures one had seen [of the streets of New York] depicted the pulsating stream of life flowing through them, but I felt more strongly than anything else their static qualities, their loneliness and grandeur."[117] Many of Hoppé's photographs thus situate the viewer at some distance from the rush of the city streets, in a manner that recalls Riegl's insistence on calm and distance. Though treating a subject that by any metric epitomized 'modernity' at its most extreme, Hoppé's work remained deeply committed to the aesthetic values of turn-of-the-century criticism.

A similar tendency can be observed in his approach to the industrial complexes of the American rust-belt and mid-west. With the exception of the forest-of-smokestacks photograph used to promote Hoppé's book and exhibition in the *BIZ*, Hoppé's treatment of industry largely abstains from the vertiginous verticality of an Erich Mendelsohn or Albert Renger-Patzsch. Instead, Hoppé's photographs tend to depict industrial sites with a horizontality that sooner suggests an unfolding landscape. His photograph of a steelworks complex in Pittsburgh, taken from an elevated position above the factory's roof, presents the viewer with a panoramic view of slender chimneys against a hazy horizon, from which dainty columns of grey smoke and white steam emerge and eddy upwards (Fig. 1.17). Hoppé counted these "plumes of smoke" as chief amongst the "marvelous subjects" that he encountered on his American travels and has depicted

[117] E.O. Hoppé, *Hundred Thousand Exposures: The Success of a Photographer* (London: The Focal Press, 1946), 187.

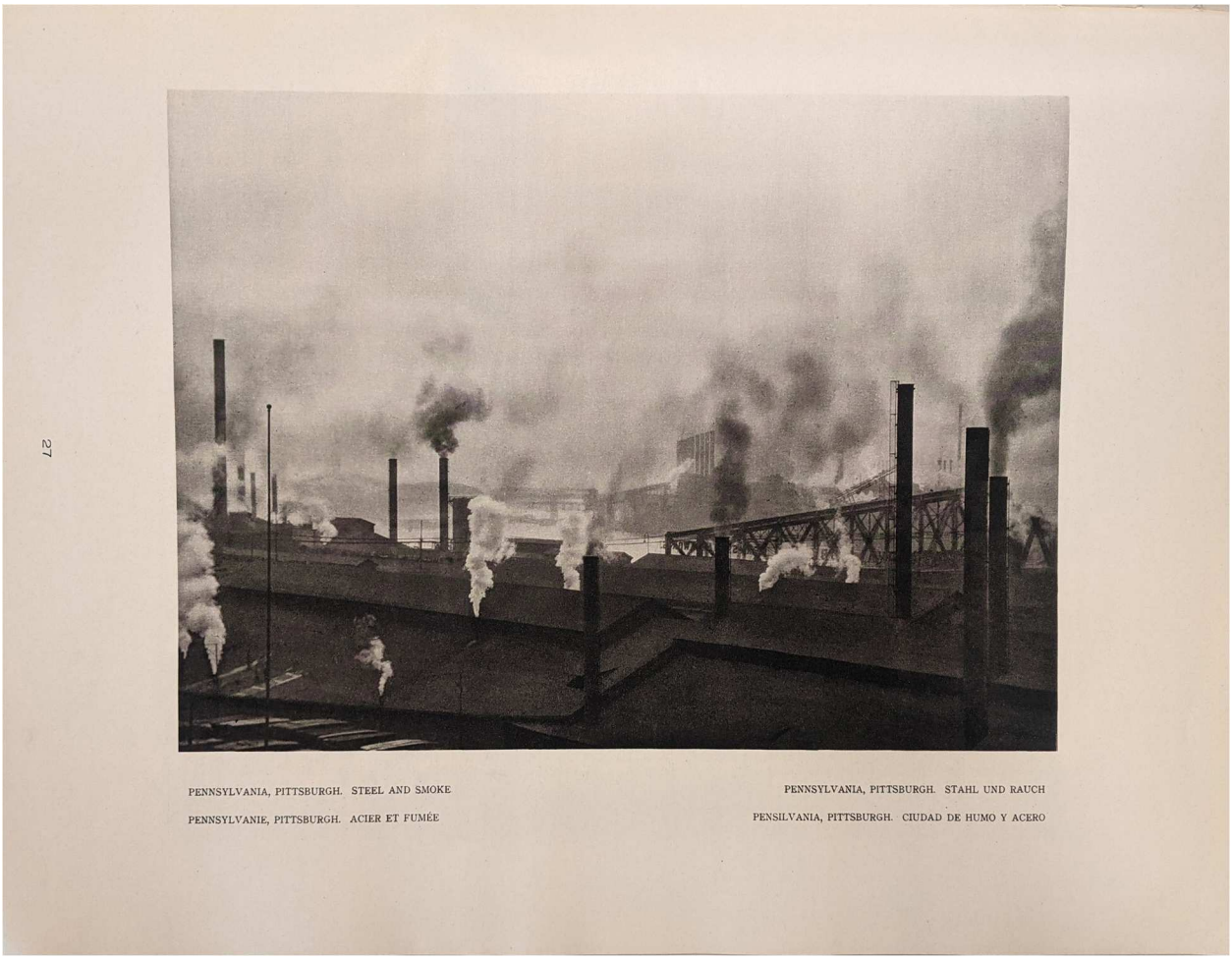


Figure 1.17: E.O. Hoppé, *Pennsylvania, Pittsburgh, Steel and Smoke*, from *Das romantische Amerika*, 1927, rotogravure.

them with a certain delicacy.[118] The slenderness of the smokestacks, their differential heights, and the alternation of smoke and steam enliven the level horizon with a gentle rhythm that is almost musical in its effect.

As I have already alluded, the plentiful smoke, steam, and fog that Hoppé captured in his industrial photographs also had an important pictorial function. As it swirled upwards, wafting through and across structures made of iron, steel, and concrete, it effectively wrapped

[118] Ibid., 188.

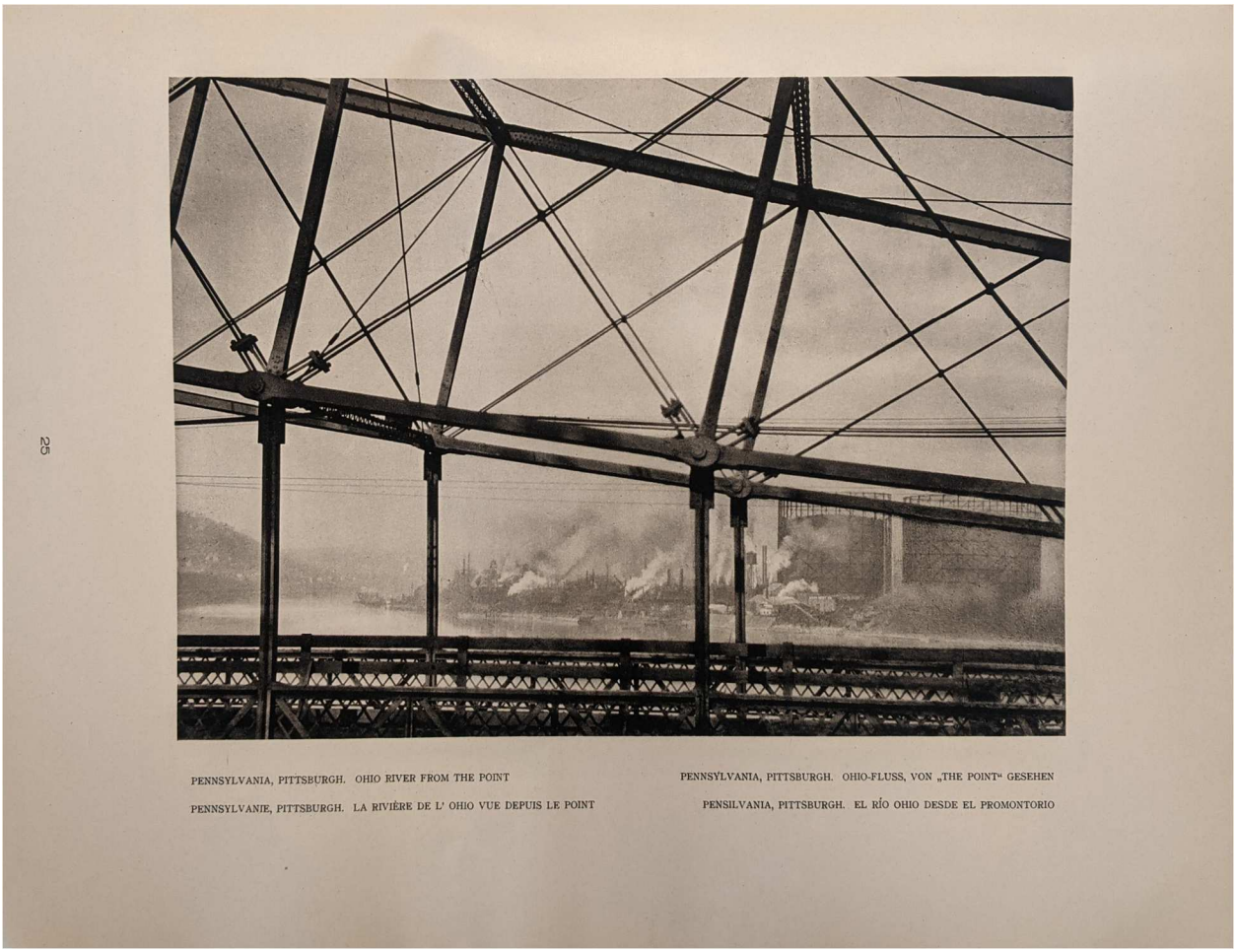


Figure 1.18: E.O. Hoppé, illustration from *Das romantische Amerika*, 1927, rotogravure.

the built environment of industrial modernity in a gently modulating veil, clothing, we might say, an architecture that shocked in its nakedness.[119] A number of Hoppé's photographs in fact show a preoccupation with confrontation between naked metal and veils of smoke; one of Hoppé's favourite compositional strategies was to present hazy view through the screen of iron and steel skeletons.[120] Ever keen to square the circle, Hoppé tipped his hat both conventional and avant-

[119] For more on the 'nakedness' of iron in early twentieth-century architectural discourse, see Sokratis Georgiadis's introduction to Sigfried Gideion, *Building in France, Building in Iron, Building in Ferroconcrete*, trans. J. Duncan Berry (Santa Monica: Getty Center for the History of Art and the Humanities, 1995), 13-15.
[120] Both Brian Stokoe and Philip Prodger have emphasized this compositional strategy as one of Hoppé's greatest legacies to photographic modernism. For Stokoe, such images "combine a modernist viewpoint with antiquated, pictorialist atmospherics," an insight to which this chapter is indebted. Prodger additionally suggests that this photograph may have influenced Walker Evans. See Prodger, 16-17; Stokoe, 83.

garde tastes, allowing one to wonder at the strong geometry of industrial forms, and the other to delight in the elements poised to obscure it (Fig. 1.18). The same might be said of Hoppé's engagement with the sharp-unsharp controversy rampant in photographic circles across Europe and North America. Although Hoppé himself was less than enthusiastic about gum-printing, he remained committed to chiaroscuro effects, and forthrightly maintained that part of the photographer's art lay "subduing an aggressive note here, encouraging a reluctant detail there, until the final rendering of tone values and detail is finished and harmonious."[121] In his urban and industrial photography, the presence of smoke, fog, and steam served a similar purpose, allowing Hoppé to produce relatively "straight" photographs that nonetheless retained a certain softness.[122]

This softness was furthermore intensified by the rotogravure process in which Hoppé's photographs were reproduced. A photo-intaglio process adapted to the rotary press, rotogravure represented an industrialization of photogravure. Compared to the halftone process, it produced images with a rich gradation of tonal values and a matte, almost velvety surface well-suited to the rendering of smoke and other atmospheric effects. Wilhelm von Bode, the director of the Royal Museums of Berlin, was even reported to have likened its effect to that of a mezzotint.[123] The process was invented in England around 1880 by Karl Klíč, a Czech-born printer who would go onto found the Rembrandt Intaglio Printing Company, which over the next decade produced

---

[121] Hoppé, 14.

[122] We can find some precedent for this strategy as early as 1912 in Willi Warstat's discussion of the foundation of Hamburg's Photographische Staatssammlung, which was put together by Ernst Juhl and included a version of the Böhmer harbour picture mentioned in the last section. Although Warstat thought the collection was still weighted a bit too heavily towards the pastoral, he praised its urban and industrial photographs, in which "the strictest objectivity (*strengste Sachlichkeit*) in no way excludes the artistic aspect (*künstlerischen Gesichtspunkt*) […]. The photographs do not detach architecture from the surrounding landscape (*landschaftlichen Umgebung*), but allow both to merge into a unified impression, as in many pictures of the Niederelbe." Willi Warstat, "Die Photographische Staatssammlung zu Hamburg," *Photographische Rundschau* (1912): 43.

[123] This statement was reported in Anonymous, "The Rembrandt Intaglio Company," *Process: The Photomechanics of Printed Illustration* 20, no. 232 (April 1913): 92-93. Whether it is true or not remains to be determined, however the mere mention of Bode's name alongside rotogravure reproduction is suggestive of a desire to emphasize its fine art associations.

high quality reproductions of works of art while treating the process as a trade secret. In 1904, a Berlin-based printer named Eduard Mertens applied for a patent on a rotogravure press that could accommodate both text and image, intended for printing illustrated newspapers and magazines.[124] Following improvements made around the First World War, the process achieved widespread use amongst the interwar *Illustrierte*, where, as Andrés Zervigón has noted, it facilitated some of the period's most innovative experiments in layout and photomontage.[125] For Hoppé and the Ernst Wasmuth Verlag, however, the process sooner represented an opportunity to reach a mass public without sacrificing the quality of photogravure, which pictorialists had long valued for its rich tonality and atmospheric effect.

In an effort to claim Hoppé as a 'modernist,' recent re-evaluations of his career have tended to elevate his photographic prints over their rotogravure reproductions, the former being more in keeping with the cool sharpness then on the rise across Europe and the United States.[126] To do so, however, would be to ignore the fact that historical viewers had very few opportunities to encounter the pictures from *Das romantische Amerika* except in such reproductions. Since Hoppé was well aware that his photographs would be received largely through the mediation of rotogravure—this project was, after all, a commission—it seems likely that he had its distinctive visual qualities in mind as he worked. Moreover, the rotogravure process becomes extremely

[124] Ernst H. Berninger, "Mertens, Eduard," *Neue Deutsche Biographie* 17 (Munich: Historischen Kommision bei der Bayerischen Akademie der Wissenschaften, 1994), 180.
[125] Andrés Mario Zervigón, "Rotogravure and the Modern Aesthetic of News Reporting," in *Getting the Picture: The Visual Culture of the News*, eds. Jason E. Hill and Vanessa R. Schwartz (New York: Bloomsbury, 2015), 201-204.
[126] For example, Philip Podger argues that with the *Amerika* project, Hoppé became "one of the first wave of photographers to embrace gelatin-silver bromide paper as an expressive tool" (Podger, 17). This claim is not incorrect, but it ignores the form in which most people would have encountered the photographs. Furthermore, there is a long tradition of pictorial photographers advising the production of sharp negatives so as to have more freedom to manipulate details and tonality during development and printing. This was true even for the production of gum prints.

Figure 1.19: Two postcards with rotogravure reproductions of gum prints by Theodor and Oskar Hofmeister, printed by the Verlag Hermann A. Wiechmann, from the series “Mutter Erde in ihrer Schönheit” and “Wälder und Berge” respectively. Museum für Kunst und Gewerbe Hamburg.

significant in a context that saw an older generation of pictorial photographers grappling with a sense of their own belatedness relative to industrial modernity. Straddling the realms of fine art and mass media, rotogravure constituted another plane for pictorialism’s complex negotiations with the realities of industrialization and mass culture.

In fact, Hoppé was not the only pictorial photographer whose works were reproduced in rotogravure in an effort to reach a larger audience. During the mid-teens, the Hermann A. Wiechmann Verlag in Munich began to produce rotogravure postcards featuring the gum prints of the Hamburg-based pictorialists Theodor and Oskar Hofmeister (Fig. 1.19). The Wiechmann postcards corresponded to a series of photobooks with titles such as *Wälder und Berge* (1910), *Stimmungsbilder aus der Heide* (1913), and *Mutter Erde in ihrer Schönheit* (1916), which presented readers with pictures of German landscapes, many of which were at the time the

subject of growing Natur- and Heimatschutz campaigns. Printed on cream-coloured cardstock with green inks, these postcards exploited the soft, inky quality of rotogravure reproduction to offer a pastoral vision of a natural world increasingly understood as in need of protection. For Hoppé, by contrast, the distinct characteristics of rotogravure reproduction represented an opportunity to redefine pictorialism in response to changing aesthetic tastes, an expanding public, and an increasingly man-altered environment, developing a visual language that could address the phenomena of industrial modernity while remaining faithful to an atmospheric aesthetic developed at the end of the last century.

Smoke, Steam, and Fire

Interestingly enough, the photograph in *Das romantische Amerika* that most departs from the calm, distanced, and rather pacific mode of representation that Hoppé developed in relation to urban and industrial phenomena does not feature a manmade object at all. Instead, it features one of the most striking natural monuments of the American national park system—the Old Faithful Geyser in Yellowstone National Park (Fig. 1.20). This picture would seem to have been marked by the verticality and violence eschewed in Hoppé's treatment of the industrial landscape. Far more aggressive than any other image included in the project, it confronts the viewer with the sublime spectacle of the geyser in the throes of a powerful eruption. From the position at which the photograph was taken, its head seems to dwarf the surrounding conifers, including a tall lodgepole pine that stands in the foreground, presenting the viewer with its singed silhouette. If Hoppé's depiction of the Pittsburgh steelworks stressed the delicacy of its slender chimneys and plumes of smoke, here he presents the geyser as an emblem of elemental

Figure 1.20: E.O. Hoppé, *Wyoming, Yellowstone Park, Old Faithful Geyser*, from *Das romantische Amerika*, 1927, rotogravure.

fury. Transformed by the photographic process and dark printer's ink, Old Faithful comes to resemble nothing so much as a tower of fire.

The complex logic of resemblance and inversion that emerges from this juxtaposition brings to the surface the some of the contradictions that subtend the poetics of pollution that mediated pictorialism's encounter with industrial modernity. Chief amongst these is its imagination of nature, technology, the relationship between the two. In the article with which this chapter began, Hoppé's spoke enthusiastically of his desire to immortalize industry's

"harmony with natural forces (*Gleichklang mit den Naturkräfte*)."[127] Hoppé's musical formulation recalls the organicist discourse that surrounded the steam in engine during the first half of the nineteenth century, which John Tresch has usefully characterized as a mechanical romanticism.[128] If mechanical romanticism stressed the analogy between the inner workings of steam technology and the human body, Hoppé's industrial romanticism stressed the analogy between the industrial environment and the elements of the natural world. To do so, he exploited the strange resemblances that the photographic medium could produce in elements of very different compositions. This rapprochement, however, had the potential to cut both ways. The confusion of mist, clouds, steam, smoke, and fire in late pictorialist depictions of industry could also contaminate representations of the so-called natural world, as though the Dickensian nightmare suppressed in Hoppé's treatment of Pittsburgh had only gone underground, to erupt in the form of Old Faithful.

This ambiguity would have profound consequences for the reception of pictorialism during the interwar period. As we shall see in the third chapter of this dissertation, modernist critics of art photography would not hesitate to link pictorial haze to the realities of industrial pollution. Indeed, this late pictorialist poetics of pollution would prove difficult to control in more ways than one. As Brian Stokoe has argued in his discussion of Hoppé's later photobook, *Deutsche Arbeit* (1930), Hoppé's depoliticized, romantic approach to industry could easily be assimilated into the discourse of reactionary modernism, where the slippage between the natural

[127] Hoppé, "Stahl und Dampf," 258.
[128] John Tresch, *The Romantic Machine: Utopian Science and Technology after Napoleon* (Chicago: University of Chicago Press, 2012), 4.

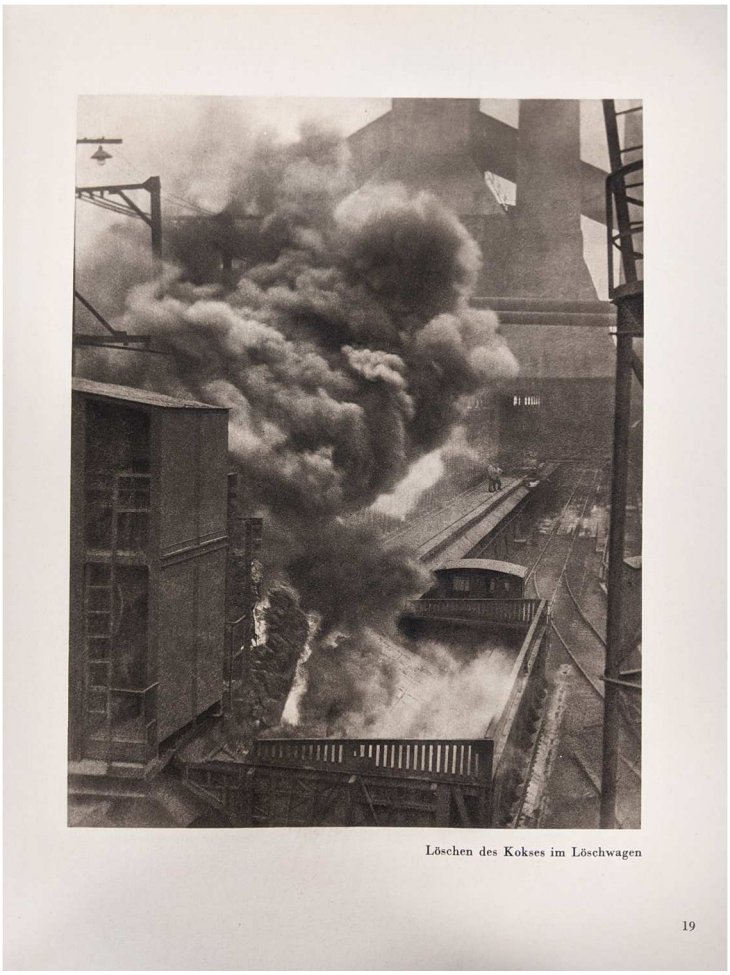


Figure 1.21: E.O. Hoppé, *Löschen des Kokses im Löschwagen*, from *Deutsche Arbeit*, 1930, rotogravure.

and the industrial contributed to ideological integration the technological into a holistic vision of German Kultur.[129]

Nonetheless, the visual language of reactionary modernism also differed from earlier pictorialist representations of industry important respects. If the pictorialist approach to industry positioned smoke and steam as the key elements of a calm, distanced, and conciliatory mode of

[129] Stokoe, 91. Jeffrey Herth famously defined reactionary modernism as a "coherent and meaningful set of metaphors, familiar words, and emotionally laden expressions that had the effect of converting technology from a component of alien, Western *Zivilisation* into an organic part of German Kultur," "combining political reaction with technological advance." Jeffrey Herth, *Reactionary Modernism: Technology, Culture, and Politics in Weimar and the Third Reich* (Cambridge: Cambridge University Press, 1984), 1-2.

representation, in these later pictures, smoke is sooner treated in terms similar to the Yellowstone geyser—as an active, aggressive, and violent force (Fig. 1.21).[130] If the former expressed a vision of the peaceful integration of nature and industry, the latter suggested a far more violent process of transformation. Of course, the peacefulness expressed in the pictures discussed in this chapter was nothing if not illusory. Elided in both visual languages—the depoliticized poetics of late pictorialism and the nationalist fervour of reactionary modernism—was the vulnerability of the human body to the smoke of industry, an issue which will be explored in the next chapter, as we follow the popularization of pictorialist aesthetics into the film studio.

[130] That these pictures could still be received as *Stimmungsbilder*, despite the complete absence of any of the calm and distance that defined *Stimmung* at the turn of the century, only testifies to the extreme malleability of atmospheric discourse during this period.

CHAPTER TWO

CHEMISTRY AND CHIAROSCURO: ATMOSPHERIC DESIGN IN THE INTERWAR FILM STUDIO

"Shadows are hard to get hold of," wrote the critic Willy Haas at the conclusion of an article on the enigmatic director Friedrich Wilhelm Murnau.[1] Published in *Film-Kurier* in September 1925, this article appeared as Murnau was hard at work on *Faust—Eine deutsche Volkssage* (1926), the last and most technically elaborate of the films that he would direct with Ufa before leaving Germany for the United States. Shadows may indeed be hard to get hold of, however, what one finds Faust and Weimar art cinema more broadly is a set of strategies designed to accomplish precisely that task. Murnau's success is this respect evident from the film's opening sequence, which stages Goethe's 'Prologue in Heaven' as a drama of chiaroscuro. Initially, the viewer is greeted with an image of pure abstraction—the energetic whirling of white smoke and black soot, engaged in a turbulent struggle for the frame (Fig. 2.1). From this elemental tempest materialize the horsemen of plague, war, and hunger, ready to rain maledictions on the earth, before a burst of light compels their retreat, leaving only the demon Mephistopheles—played by Emil Jannings—squinting in their wake (Fig. 2.2). Robert Herlth, who together with Walter Röhrig served as the film's set designer, recalled Murnau's insistence on such shadows after his first review of the sets and lighting, which the director found far too bright. "Just as you and Röhrig suggest light by drawing shadows," Murnau is reported to have said, "so the cameraman ought to create shadow too. That's much more important than creating light."[2] Though

[1]Willy Haas, "Wie ich Murnau kennengelernte," *Film-Kurier* (28 September 1925), np.
[2] Robert Herlth, "With Murnau on the Set," in Lotte Eisner, *Murnau* (Los Angeles: University of California Press, 1973), 62.

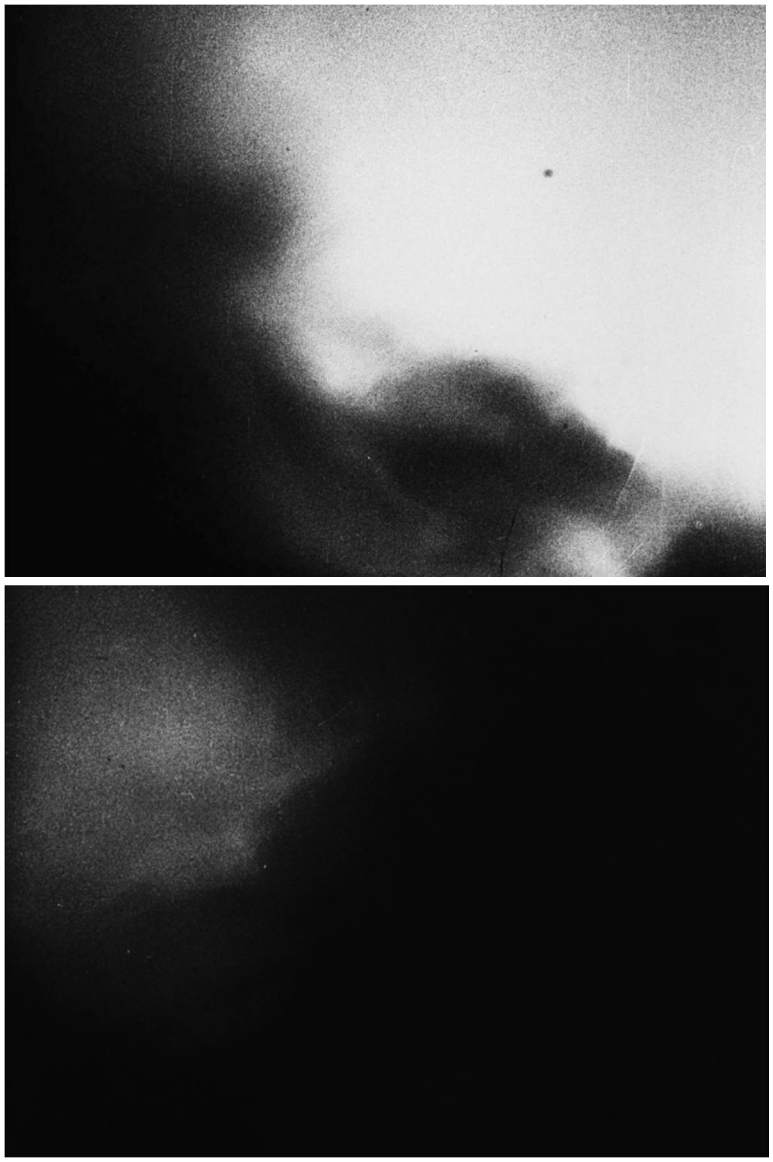


Figure 2.1: Black soot and white smoke compete for the frame in *Faust* (Dir. F.W. Murnau, 1926).

Weimar-era cinema, and visual culture more broadly, has often been discussed in relation to artificial light, Murnau's comment here suggests that an equally potent fascination with the murky and penumbral, with the shadowy, dark, and indistinct, lay lurking beneath this interwar addiction to light.

In this respect, the 'Faust-Film,' as it was known in the German press, is perhaps less unique than exemplary. As generations of critics have attested, no other national cinema of the

Figure 2.2: Mephisto materializes out of the smoke, stills from *Faust* (Dir. F.W. Murnau, 1926).

silent period managed to so completely harness the expressive potential of the shadow in its creation of cinematic worlds. Indeed, an elaborate apparatus of set design, lighting techniques, chemical experiments, and camera effects would seem to have been geared towards nothing else. Haas's phrase is thus particularly apt, but the formulation does not belong to him alone. The set of terms including 'shadow,' 'mist,' 'chiaroscuro,' and 'atmosphere' permeate interwar film criticism like the diffuse phenomena that they purport to describe. This stress on the atmospheric is perhaps not surprising, since, as with pictorial photography, the notion of Stimmung served as a privileged category of interwar film discourse, repeatedly invoked by practitioners as the very grounds upon which film could claim its status as a work of art. The term then appeared as a key concept in the work of interwar film theorists like Rudolf Kurtz and Béla Balázs, before being picked up by Lotte Eisner, whose canonical text, *L'Ecran demoniaque* (1952), disseminated the notion internationally as the essential hallmark of 'Expressionist' cinema.

Weimar art cinema might thus be regarded as a descendent of early twentieth-century pictorial photography, continuing the trend towards popularization discussed in this dissertation's first chapter, even as filmmakers turned to atmospheric effects to raise their work above the standard fare of cinematic exhibition.[3] In situating the prestige productions of German silent cinema within this genealogy, my intention is less to suggest a direct line of influence (though pictorial photographers did occasionally cross paths with film professionals), than to acknowledge the extent to which the visual and rhetorical strategies of interwar cinema were indebted to the turn-of-the-century campaign to legitimize photography as an artistic enterprise.[4]

[3] In Germany, the effort to distinguish films of quality from "Schundfilme" in an effort to appeal to more respectable, middle-class audiences began with the Kino-Debatte of the late aughts and early teens. Later in the 1920s, Ufa adapted this rhetoric to distinguish its productions from imported American films on grounds of artistry. For more on the Kino-Debatte see Anton Kaes, "The Debate about Cinema: Charting a Controversy (1909-1929)," *New German Critique* 40 (Winter 1987): 7-33.

[4] For instance, E.O. Hoppé toured Ufa's studios and photographed a number of its stars and personnel, including Fritz Lang and Brigitte Helm. Perhaps more compellingly, Hans Nagte, the photographer responsible for the

If Stimmung, during the Weimar period, could become a shorthand for the cinema's artistic ambitions, it was thanks in large part to the pictorial photography movement, which over the preceding decades had disseminated the concept beyond the academic domains of philosophy and art history to a larger middle-class audience.

Though the importance of Stimmung to Weimar cinema has long been acknowledged, the orientation of much scholarship towards film narrative and character psychology has meant that the atmospheres of Weimar cinema have often been treated more narrowly in terms of mood, as something akin to pathetic fallacy. Such an interpretation of Stimmung has recently been productively complicated by Katharina Loew and Inga Pollmann. Through a careful examination of the term's usage amongst film professionals, Loew has persuasively argued for its usage as a strategy to legitimate the cinema by endowing the technical images with the 'spiritual' value considered essential to the work of art.[5] Inga Pollmann, by contrast, has outlined the term's intersection with theories of environment and milieu, suggesting that cinematic Stimmung might be regarded as the aesthetic expression of a specifically vitalist conception of the relationship between organism and environment, defined as fundamentally contingent and porous.[6]
This chapter aims to build on this conversation by examining practical techniques for the production of Stimmung within the interwar film studio. In doing so, it aims to situate the atmospheres of Weimar cinema within a larger discourse of atmospheric design, positioning the studio and its practices as a mirror to the increasing technicity of the atmosphere in the modern

production stills from Murnau's *Faust*, himself experimented with pictorialist printing techniques, and in fact reprinted a number of *Faust* stills on heavyweight paper using the bromoil process. These bromoil prints, which only further enhanced the atmospheric quality already present in the originals, are today held in the Emil Jannings Collection at the Deutsche Kinemthek.

[5] Katharina Loew, "Techno-Romanticism: Special Effects in German Fantastic Films of the Silent Era," PhD Dissertation (University of Chicago, 2012), 117-121.

[6] Inga Pollmann, "The Interweaving of World and Self: Transformations of Mood in Expressionist and Kammerspeil Film," *Cinematic Vitalism: Film Theory and the Question of Life* (Amsterdam: University of Amsterdam Press, 2018), 166.

world. For this reason, this chapter does not so much treat *films* as it does *film production*, especially those aspects of production geared towards the fabrication and manipulation of the most nebulous of atmospheric phenomena—smoke and clouds. Stimmung, in this framework, becomes, among other things, a specific form of artificial weather, drawing the worlds projected onscreen into conversation with an industrialized world in which the air itself was being reconceived as an object of design.

Keeping in mind, however, the term's historical malleability, this chapter will also consider how the artificial atmospheres of the film studio inflected the discourse of Stimmung with a darker valence. Though Stimmung had once held out the promise of relief or reprise from the modernity, it became, in the context of Weimar cinema, contaminated with growing anxieties over the human body's vulnerability to its immediate environment. As I will argue, this vulnerability was apparent to no one so much as those working in the film studio, whose work occasioned regular exposure to the corrosive elements recruited into the production of cinematic atmospheres. Moving between the discourse of film critics, the material practices of studio technicians, and the physical environment of the studio itself, this chapter thus posits the artificial atmospheres of Weimar cinema as an ambiguous response to both the noxious smoke of the city and the chemical trauma of the First World War, characterized in equal measure by fear and fascination over man's increasing power to alter his environment.

Stimmung in the Cinema

The groundwork for Lotte Eisner's influential discussion of *Stimmung* in Weimar cinema is laid in the introductory chapter of *The Haunted Screen*, in which Eisner outlines a predisposition towards Expressionism that, she argues, characterized the German

Weltanschauung in the Weimar period. Though Eisner's recourse to the notion of a Weltanschauung—an aspect of her work that evinces the influence of her art historical training under Heinrich Wölfflin—has been criticized, her account retains a high degree of value as a historical document.[7] Eisner was not only the first historian of German silent cinema, but also began her career as a journalist for *Film-Kurier*, bringing her into close contact with the film professionals whose accounts about set design, lighting, and trick effects formed core of this book.[8] Eisner's account is thus highly suggestive of the transformations that the notion of Stimmung underwent as it was incorporated into interwar film discourse, one of the most notable of these being its contamination with a growing sense of anxiety. Indeed, her account lays particular emphasis on the experience of a world that had become "so permeable that, at any one moment, Mind, Spirit, Vision, and Ghosts seem to gush forth, exterior facts are continually being transformed into interior elements and psychic events are exteriorized."[9] Notable in this statement is its acknowledgement of a multi-directional exchange between the human psyche and a non-human environment, carrying the potential of both revelation and threat.

It was perhaps in an effort to preserve this ambiguity that Eisner insisted on the term *Stimmung* even when writing for a French public (and during the immediate postwar period, at the height of anti-German sentiment, at that). As she later elaborates, Stimmung could emanate from objects and spaces as much as people, and the examples incorporated into her discussion largely follow the pattern of turn-of-the-century art criticism by linking Stimmung closely to atmospheric phenomena such as the glow of a hanging lamp, the shadows parted by a ray of

---

[7] Ulrike Wendland (ed.), "Lotte H. Eisner," *Biographisches Handbuch deutschsprachiger Kunsthistoriker im Exil* (Berlin: De Gruyter, 2011), 136-138.

[8] Eisner acknowledged this influence in her autobiography: "Erst als ich den Regisseuren und Kameraleuten in den Studios auf die Finger schauen konnte, begriff ich den kunstvollen architektonischen Aufbau des Films." Eisner, *Ich hatte einst ein schönes Vaterland* (Heidelberg: Wunderhorn, 1984), 83.

[9] Eisner, *The Haunted Screen: Expressionism in the German Cinema and the Influence of Max Reinhardt*, trans. Robert Greaves (Berkeley; Los Angeles: University of California Press, 2008), 15.

light, the swirling smoke a cigar, the heavy mist over a landscape, or the stifling steam in a lavatory sequence of Murnau's *Der letzte Mann* (1925).[10] Equally important to her usage of the term, however, was its historical importance as a strategy for legitimizing cinematic images. As Katharina Loew has demonstrated, the term Stimmung functioned as something of a magic word amongst filmmakers of the teens and twenties, anxious both to counteract critics who decried the 'soullessness' of the camera and to demonstrate its artistic potential.[11] Given just how closely cinema's struggle for legitimacy mirrored that of photography in the 1890s, it is not surprising that this keyword of pictorial photography became so prominent amongst filmmakers and critics, who were eager to convince the same middle-class audience of the cinema's legitimacy as an artistic medium.[12] Stimmung, in this sense, offered a path to legitimation that accompanied the turn to narrative and literary adaptations during the teens, providing a visual justification for cinema's merit as an artistic medium.[13]

That being said, importing Stimmung into film discourse also entailed grappling with the constructed nature of the worlds presented on screen, which Eisner acknowledge might very well, to the 'non-German' seem a "mere thing of the studio, smacking of plaster, pasteboard, and insufficient oxygen."[14] Could Stimmung, which for pictorial photographers was premised on an encounter with the natural world, really be artificially produced? Though this tension already lay latent in pictorial photography, where one finds little hesitance around manipulation, film

[10] Eisner, 199-200.
[11] Loew, "Techno-Romanticism," 120; also see Katharina Loew, *Special Effects and German Silent Film* (Amsterdam: University of Amsterdam Press, 2021), 36.
[12] Béla Balázs even went so far as to insist that "atmosphere is to be sure the soul of every art." See Béla Balázs, *Early Film Theory (Visible Man and The Spirit of Film)*, trans. Rodney Livingstone (New York: Berghan Books, 2010), 22.
[13] Kaes, 9, 15-23.
[14] Eisner, 151

discourse of the interwar period can be distinguished in its willingness to confront this tension head on. As the critic Béla Balázs acknowledged in 1924,

> Developments in cinema are leading further and further from nature in its original state. Even now, modern film technique avoids outdoor shots as far as possible, preferring instead to construct every milieu, including gardens and publics streets, indoors. In indoor studios, moreover, directors are reluctant to rely simply on a glass roof and prefer to use artificial light. Even outdoor nature shots are rarely taken without the assistance of reflectors. Nature is not allowed a voice in its original state.[15]

Rudolf Kurtz, whose book *Expressionismus und Film* (1926) constituted a key source for Eisner, likewise stressed the cinema's "constructive spirit."[16] Prefiguring Benjamin's famous invocation of the blue flower, Kurtz insisted that "the more naturalistic a film seems, the more 'reality' it requires, the more artificial is its construction."[17] For this reason, Thomas Elsaesser has advocated an approach to Weimar cinema that "highlights the work of the set designer as an 'ensemblier,' as someone who can take the phenomenal realm, separate it into discrete visual components, and from these re-assemble a 'world.'"[18]

For Balázs, however, cinema's constructed nature was no reason to abandon the idea of Stimmung. Though he considered it the task of the filmmaker to discover "the eyes of the landscape"—a turn of phrase that recalls the words of Hermann Wilhelm Vogel and Carus before him—Balász argued that this task was in many cases better accomplished in the studio than on

---

[15] Balász, 52.

[16] Rudolf Kurtz, *Expressionism and Film*, trans. Brenda Benthian (Herts: John Libbey Publishing, 2016), 11. Kurtz furthermore contrasted this constructive spirit of Expressionism with the more passive, sensitive disposition of Impressionism, arguing the Expressionist "creates his own world rather than empathizing with the existing one" (Kurtz, 21). In this respect, Kurz's approach to so-called Expressionist cinema rather dramatically departed from the tradition of empathy aesthetics that informed critics like Eisner and Balázs's use of the term.

[17] Ibid., 51.

[18] Thomas Elsaesser, *Weimar Cinema and After: Germany's Historical Imaginary* (London: Routledge, 2000), 46. Elsaesser for his part follows Eisner in defining Stimmung as "the play of light and shadow, the painterly compositions, the diaphanous transparency, and yet tactile plasticity, of the image" (Ibid., 227). Nonetheless, his account of Weimar cinema for the most part avoids engaging with the term. It appears only twice in his book, notably in connection with Murnau's films.

location.[19] In this way, Balázs reframed Stimmung as a property that was no longer necessarily rooted in an organic situation, but could be artificially constructed through set design, artificial lighting, and the selection of poetic motifs without any loss of authenticity. Indeed, for Balázs it was precisely the cinema's distance from the natural world that allowed it to claim its place as a legitimate aesthetic enterprise. As he later insisted, "The stylization of nature […] is the *precondition* without which a film cannot be a work of art. […] For art, it is only the animation of nature by the human spirit that counts."[20]

In light of comments such as these, one can readily understand why the atmospheres of Weimar cinema have at times been narrowly treated as a kind of pathetic fallacy, externalizing the tortured psyches of the characters on screen.[21] Balázs, however, was deeply committed to a revelationist understanding of cinema as a medium for the human encounter with a nonhuman environment, as his famous reflections on the "physiognomy of things" makes abundantly clear.[22] Stimmung, for Balázs, thus served as a keyword in a kind of critical humanism, rendering the human and nonhuman permeable to one another. Importantly, such a formulation does not foreclose the possibility of endowing the nonhuman would with human subjectivity, but it equally entails the exposure of the human, via atmosphere, to nonhuman alterity.

---

[19] Balázs, 44. "Location shots of a town can be very beautiful and have the added charm of creating a credible reality. But we rarely find in them the eyes from their soul shines forth. Instead, they often serve only as didactic illustrations to a geography lesson. However, the black silhouette of a bridge with a gondola rocking beneath it, a flight of steps sinking into dark water that reflects a lantern's light—such things create more of the Stimmung of Venice—even if they have been shot in a studio—than St. Mark's Square shot on location."

[20] Ibid., 52-53.

[21] John Ruskin, "The Pathetic Fallacy," *Modern Painters, Volume 3* (London: George Routledge & Sons Ltd., ND], 170. For Ruskin, the problem with pathetic fallacy was less the employment of metaphors, than the employment of metaphors that do not correspond to qualities in the object itself, which he saw as precluding a more genuine and truthful encounter with the natural world.

[22] Balázs, 23. "In the speaking world, silent objects are much more lifeless and insignificant than human beings […]. In film, however, this difference of degree vanishes, objects are not degraded or diminished in this way, but share with human beings a quality of silence that makes the two almost homogenous, since it enhances the mute object's vitality and significance. Since it does not speak less than human beings, it says just as much. *That is the riddle of the special atmosphere of film*" (emphasis mine).

The dangers of such a permeability were already amply discussed in art criticism and aesthetic theory of the early twentieth century, appearing as a motif first amongst turn of the century critics of Impressionism, before cropping up at the heart of Wilhelm Worringer's *Abstraktion und Einfühlung* (1908), which diagnosed a "dread of space in relation to the extended, disconnected, and bewildering world of phenomenon" behind the impulse towards abstraction.[23] Although Worringer's book did not explicitly invoke modern art, it was quickly taken up as a manifesto for Expressionism, and through this path became an important touchstone for theorists of 'Expressionist' film such as Kurz and Eisner. Eisner herself made reference to this passage in order to insist on the "great anxiety that man experiences when terrorized by the phenomena that he perceives around him, the relationships and mysterious polarities of which he is unable to decipher."[24] Stimmung, in this sense, resists the projection of meaning, and it precisely in that is affective force lies.

Of course, the question remains, can such alterity still exist in a world constructed out of isolated fragments—a world which, in many cases, existed *only* in fragments? Though the creation of worlds in the studio represented, at least in part, an effort to overcome the contingencies of an unpredictable environment, during this period critics and theorists were highly sensitive to the difficulty of drawing any sharp line between the natural and the artificial. Even a constructed world might contain its share of nature; or, rather, might constitute a new form of nature, whether under the rubric of second nature or nature-culture. This, at least, is the position articulated by Walter Benjamin in reference to another species of technologically engendered world, the planetarium. In this short text, which appeared at the conclusion of *One-*

[23] Wilhelm Worringer, *Abstraction and Empathy*, trans. Michael Bullock (Chicago: Elephant Paperbacks, 1997),16. Worringer himself drew heavily on Alois Riegl, whose discussion of Impressionism is explored further in this dissertation's third chapter.
[24] Eisner, 13.

Way Street (1928), Benjamin asserted that, "in technology, a *physis* is being organized through which mankind's contact with the cosmos takes a new and different form."[25] The use of the Greek term 'physis' here is significant. Often translated as 'nature' in opposition to *techne*, the term also carried the additional meaning of change and growth, implying a capacity for dynamic development. For all its constructed character, what was crucial, for Benjamin, was that this new *physis* remained capable of transformation beyond human control, whether for better or worse. Though the First World War represented this new physis at its most lethal, Benjamin nonetheless maintained that it carried the possibility of provoking profound revelation, insisting that "the paroxysm of genuine cosmic experience is not tied to that tiny fragment of nature that we are accustomed to call 'Nature.'"[26]

Such an expanded conception of nature corresponds closely to that described by Paul Wegener, who directed early monuments of German supernatural cinema such as *Der Student von Prag* (1913) and *Der Golem* (1920). In a lecture delivered in April 1916, Wegener declared his fascination with cinema's "fantastic mixing of nature and art, truth and scenery," positing a film in which "microscopic particles of fermenting chemical substances could be filmed together with small plants of various sizes, so that the material from which these visions arise could no longer be recognized."[27] Here, the natural and the artificial are so thoroughly transfigured by the

---

[25] Walter Benjamin, "To the Planetarium," *One-Way Street*, trans. Edmund Jephcott (Cambridge, Mass.: Harvard University Press, 2016), 59.
[26] Ibid.
[27] Paul Wegener, "Die künstlerischen Möglichkeiten des Films," in *Paul Wegener, sein Leben und seine Rollen: Ein Buch von ihm und über ihn*, ed. Kai Möller (Hamburg: Rowohlt, 1954), 110, 112. Wegener later described this imagined film in even greater detail. Though for the purposes of this chapter this second description is somewhat superfluous, it is interesting insofar as it demonstrates the close proximity of the fantastic and scientific in the cinema: "Imagine a film of this kind, possibly accompanied by music. A wide empty space. Suddenly, powerful lilies grow up from the lower edge, the lilies bloom, the leaves lick upwards, gradually become flames, the flames generate a thick smoke, the smoke turns into a heavy cloud, large crystal drops fall from the cloud, they fall ever harder, until an ocean emerges, and now the whole pictures sways just like a reflective sea. Out of the ocean rise strange figures, they tame the waves, the tide is pushed back. Strange aquatic plants appear, which spread across the entire picture and become frost flowers on a frozen sea. A magnificently lively surface. On this surface cell nuclei, cell centers, gradually form. These centers develop into new surfaces, and these surfaces clarify themselves more

camera as to become virtually indistinguishable. One might even say that Wegener's imagined film underlines the fundamental technicity of nature in a modern, industrialized world. Afterall, how 'natural' could these potted, presumably greenhouse-grown plants really be? More revealing still, it is the animation proper to synthetic substances—chemical compounds—that constitutes the locus of Wegener's fascination. He even goes so far as to ascribe a cosmic dimension to the spectator's confrontation with this eruption of nonhuman, inorganic life: "We enter the realm of pure kinetics, the universe of optical lyricism!"[28] By highlighting the affective and revelatory force of this cinematically mediated encounter with inorganic life, Wegener offers a counterweight to the psychological perspective that has largely characterized discussions of Weimar film atmospheres. Atmosphere—albeit at the microscopic scale—is not positioned as a carrier of meaning, much less human meaning. Rather, it is celebrated as an encounter with an animated world set in motion not by the spirit, but by technological forces that are capable of moving both the elements and the human.

Harnessing the Air

In this chapter, however, I am ultimately less interested in *what* atmosphere does than I am in *how* it is produced. More specifically, I am interested in situating Weimar filmmakers' desire to produce designed atmospheres and their confidence that such a feat could be accomplished within a larger techno-cultural discourse of atmospheric design. What follows in this next section, then, is a media archaeological excursion that draws together meteorological science, chemistry, speculative literature, and cultural history in order to trace the path through

---

and more in rapid movement. Suddenly the cellular nuclei break apart and radiate like fireworks! […] Using all conceivable forms and elements, like artificial steam, electrical sparks, and so on, a film could be created that becomes an artistic experience—an optical vision, a great symphonic fantasy!"

[28] Ibid., 112.

which the atmospheric came to be understood as amenable to human manipulation and even fabrication. As we shall see, media technologies were from the start deeply implicated in the transformation of the atmosphere into an object of design, making Weimar film studio only one specific configuration of the shifting relationship between technology, the human, and the environment. Nonetheless, the cinema remains an exemplary site insofar as it was in the film studio, more than anywhere else, that these ambitions to harness the atmosphere seemed closest to realization, a point which will be taken up further in the next section.

For the purposes of this paper, this media archaeology can begin in the mid-nineteenth century with the electric telegraph. In his seminal infrastructural history of climate science, the historian Paul N. Edwards singled out Samuel Morse's demonstration of long-distance telegraphy in 1844 as the beginning of modern meteorology, enabling the discipline to establish itself as a global science capable of handling a global object.[29] As Edwards explains, because telegraphy made possible, for the first time, the rapid exchange of weather data across enormous regions of space, it allowed for the construction of "maps of simultaneous observations [that] functioned like snapshots" of global weather patterns.[30] His use of the term snapshot is particularly apt, since it signals an effort to transform transient atmospheric phenomena into stable images, making them amenable to analysis. Concomitant with this shift, meteorologists also strove to adopt more stringent empirical standards in order to manage and make commensurable the data that weather telegraphy made accessible.[31] In effect, empiricism functioned as a strategy to make quantitative data cohere into a unified image, embodied above all in the synoptic weather map, which portrayed the weather as a global system. Telegraphic

[29] Paul N. Edwards, *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming* (Cambridge, Mass.: MIT Press, 2013), 40.
[30] Ibid., 41.
[31] Ibid., 63.

media thus had enormous consequences for the fledgling discipline of meteorology. Where meteorology, until this point, had largely consisted of descriptive accounts of past weather conditions, the telegraph's establishment of a global observation network introduced the possibility of weather prediction, reorienting meteorology towards the future.

This reorientation of meteorology was not without effects on the cultural sphere. In late nineteenth-century literature, the harnessing of the sky and atmospheric phenomena for human purposes became a recurrent theme of speculation and apprehension. For instance, the symbolist writer Villiers de l'Isle-Adam's satirical short story, "Celestial Advertising" (1883), masquerades as a publicity brief for a new high-powered projector capable of placing advertisements and political propaganda amongst the clouds, converting these formerly "sterile spaces" into property capable of yielding a profit.[32] Drawing more explicitly on the imaginary of the telegraph, Albert Robida's novel *Le Vingtième Siècle*, also published in 1883, presented readers with a futuristic vision of a variety of media environmental technologies. *L'Epoque*, Robida's newspaper of the future, constitutes an extension of telegraphy's promise of instantaneous transmission into the audiovisual, delivering the news instantaneously to subscribers' homes by way of a *téléphonoscope*.[33] It is at the Paris headquarters of *L'Epoque*, however, that this audiovisual technology attained its most striking dimensions. As described by Robida and pictured in the author's own illustrations, the newspaper's offices were crowned with two enormous glass screens that "resemble[d] two moons, particularly after dark, when an electric spark made them shine against the dark background of the sky."[34] Appearing six years later, the short story "In the Year 2889" (1889), attributed to Jules Verne but likely written in large part by his son

[32] Auguste Villiers de l'Isle-Adam, "L'Affichage celeste," *Contes cruels* (Paris: Calmann Lévy, 1893), 52.
[33] Albert Robida, *Le Vingtième Siècle* (Paris: Georges Decaux, 1883), 54.
[34] Ibid., 199.

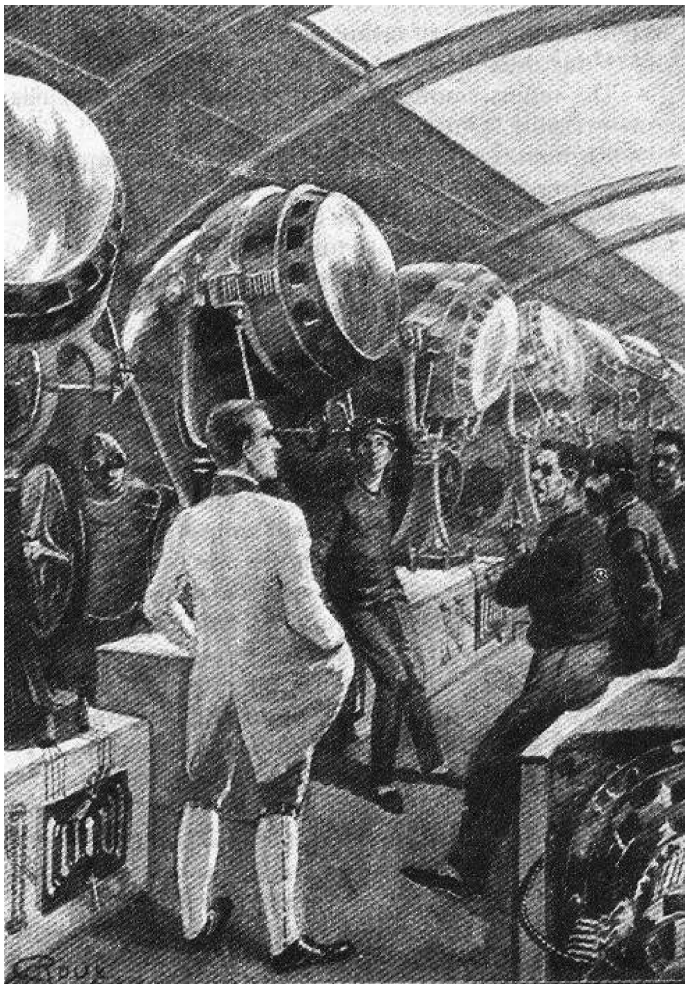


Figure 2.3: Illustration by Georges Roux showing *The Earth Chronicle's* battery of cloud projectors in Jules (or Michel) Verne's short story, "In the Year 2889."

Michel, presented another variant on this theme. No longer content with physical screens, Verne's futuristic newspaper conglomerate, *The Earth Chronicle*, included a dedicated "sky-advertising" department equipped with a "thousand projectors constantly engaged in displaying upon the clouds mammoth advertisements" that could be seen across the world (Figure 2.3).[35] No longer simply an aid to the study of atmosphere, media here have themselves become atmospheric.

In an essay on the phenomenon of sky projection, Erkki Huhtamo has discussed these works as only the most fantastic manifestations of the vertical drive of late nineteenth-century

[35] Jules Verne, "In the Year 2889," *Forum* (February 1889): 262.

visuality.[36] As Huhtamo argues, the vertical growth enabled by steel-frame construction endowed altitude itself with a value and a politics. Moreover, as Huhtamo's media archaeological research has demonstrated, such literary speculations existed alongside a number of practical experiments in sky projection. Among other examples, he cites the Rogers Electric Cloud Projector, which was presented at the World's Columbian Exhibition in Chicago in 1893, where it projected the number of exhibition visitors onto the clouds each evening. We might consider this cloud projector in the lineage not only of cinematic projectors, but of phantasmagoric projections onto smoke, brought up to the planetary scale. For Huhtamo, what binds these realized and imaginary media experiments together was their shared "demotion of the sky to the role of a background."[37] The ambition to transcend the screen thus had the effect if transforming the sky itself into a kind of "super-screen."[38]

Huhtamo's essay offers a fascinating survey of the obscure but recurrent dream of placing man-made images into the heavens. However, his focus on the sky-as-screen leaves unaddressed the extent to which media's atmospheric ambitions necessitated a concomitant transformation of the atmosphere itself into a technical object. Though the Rogers Cloud Projector and Villiers de l'Isle-Adam's celestial advertising are well represented by the concept of the sky-screen, there is something more going on in the work of Robida and Verne, which will prove important for our discussion of Weimar film atmospheres. For the latter authors, the sky is not only an empty field to be made profitable through the projection of images; rather, it is itself presented as already a product of design.

[36] Erkki Huhtamo, "The Sky is (not) the Limit: Envisioning the Ultimate Public Media Display," *Journal of Visual Culture* 8 (2009): 331.
[37] Ibid., 332.
[38] Ibid., 330.

Figure 2.4: Albert Robida, illustration from *Le Vingtième Siècle* (1883).

For instance, the final illustration of Robida's novel, which appears as a headpiece for the book's table of contents, presents the reader with a mock advertisement that reads "No more bad weather—electric vacuums suck up the clouds." The illustration itself shows an enormous vacuum heaving to inhale a thunderstorm, complete with lightning bolt, while a fashionably attired woman in the foreground folds away a now unnecessary umbrella (Figure 2.4). Similarly, before arriving at the offices of *The Earth Chronicle*, Verne's narrator describes a series of climate-modifying inventions, including solar accumulators that supply continuous electricity and modulate planetary temperature; air purification systems that purge the atmosphere of the "micro-organisms that formerly used to swarm it," a comment which immediately recalls the multiple cholera epidemics of the nineteenth century; and finally, ongoing research into

"nutritive air."[39] Well-prepared by this survey of atmospheric technology, the reader is hardly surprised to learn, upon arrival at the *Earth Chronicle* headquarters, that the company also includes a meteorological division charged with creating artificial clouds to furnish the company with projection surfaces. In this way, while Villiers de l'Isle-Adam contented himself with spoofing the insatiable drive of the advertising industry, Robida and Verne's variations on the theme comment on a larger scientific project to render the weather more reliable and productive. Indeed, the explicit invocation of meteorology in Verne's story is highly suggestive of the (il)logical continuity between prediction and production, a slippage that would continue to haunt meteorological science through the twentieth century into the present.

Sloterdijk's discussion of the environmental legacy of the First World War is corroborated by a number of historical sources. As the historian Peter Frizsche has emphasized, an anxiety about the possibility of aerial gas attacks was a potent force in the Weimar-era cultural imaginary, intensifying in 1923 with the French occupation of the Ruhr and again in 1928 after a gas leak at a chemical facility in Hamburg resulted in the eleven deaths.[40] Not only was the experience of wartime gas attacks described in horrific detail in popular war memoirs such as Ernst Jünger's *In Stahlgewittern* (1920), popular publications like the *Berliner Illustrirte Zeitung* and *Die Koralle* also repeatedly featured images of gas masks.[41] These appeared both in the context of articles expressing anxiety about future conflicts and enthusiastic reports about peacetime applications, such as the use of gasmasks for sanitation workers and asthmatics.[42] In

---

[39] Verne, 262.
[40] Peter Frizsche, "The Economy of Experience in Weimar Germany," *Weimar Publics/Weimar Subjects: Rethinking the Political Culture of Germany in the 1920s* (New York, Oxford: Berghain Books, 2010), 375.
[41] See Ernst Jünger, *The Storm of Steel* (New York: Howard Fertig, 1996), 78, 97, 186, 238. For more on popular representations of gas masks, see Frizsche, 375; for a study of the gasmask's intersection with discourses of gender in the media, see Peter Thompson, "Wardens of the Toxic Ward," *German Studies Review* 43, no. 2 (May 2020): 357-364.
[42] See, for example, Erich F. Dach, "Kampf dem Asthma: Das Wesen der allergischen Krankheiten," *Die Koralle: Monatshefte für alle Freunde von Natur und Technik* 5, no. 1 (April 1929): 16-19 and Dr. Gertrud Woker, "Gift-

Figure 2.5: Gasmasks in Weimar print media, "Three Mask Sizes for the Whole Family," an advertisement printed in *Gasschutz und Luftschutz* in September 1931, and a photograph from the article "Kampf den Asthma," which appeared in *Die Koralle* in April 1929.

Gas: Die furchtbarste Waffe zukünftiger Kriege," *Die Koralle: Monatshefte für alle Freunde von Natur und Technik* 5, no. 10 (January 1930): 461-464.

these later, gasmasks increasingly entered the domestic sphere, depicted as household fixtures and even, with some apparent irony, as fashionable accoutrements (Fig. 2.5).[43]

Alongside such prosaic incursions of the gasmask into the sphere of everyday life, critical theorists of the Weimar period also emphasized the degree to which industrialized warfare had fundamentally altered both the category of nature and the human relationship to its environment. In the planetarium essay discussed in the last section, Benjamin placed particular stress on the planetary scale of the war, writing:

> The last war […] was an attempt at a new and unprecedented commingling with cosmic powers. Human multitudes, gases, electrical forces were hurled into open country, high-frequency currents coursed through the landscape, new constellations rose in the sky, aerial space and ocean depths thundered with propellers, and everywhere sacrificial shafts were dug through mother earth.[44]

Anticipating Sloterdijk's discussion of the war's chemical legacy, Benjamin here casts the war as an unprecedented technological orchestration of the environment, as a perverse exercise in world-making that extended from the seas to the skies. Turned lethal by chlorine and aerial bombardment, the air here enters the horizon of the perceptible with devastating force.

It is perhaps this experience that enabled the unique sensitivity to atmospheric conditions that one finds throughout Benjamin's unfinished *Arcades Project*. Indeed, one might even characterize this sprawling quilt of quotations and aphorisms as a fragmentary study of the technological atmospheres of modernity. Certainly, the weather recurs frequently enough throughout its convolutes, appearing in connection to themes as diverse as boredom, history, and

[43] Berlin even boasted a dedicated store where civilians could purchase gasmasks, and tin soldiers. In a somewhat satirical article about this store that appeared in the magazine *Gasschutz und Luftschutz* in November 1931, we read that here one can find "gasmask of every kind, for men, women, and children. There are gasmasks for different hairstyles, for which care has been taken that they sit properly when, for example, a woman wears considerably full hair in braids, and also for the *Bubikopf*." See "'Der erste Berliner Gasmaskladen: Das modernste Geschäft der Welt," *Gasschutz und Luftschutz* (November 1931): 74.
[44] Benjamin, 94.

Geothe's Romantic sensibility.[45] For the purposes of the present discussion, however, the most interesting of such remarks pertain to the interior of the arcades, which emerge as a technology for climate control par excellence. Benjamin's fascination is evident in the host of fragments that describe the arcades in terms of their artificial illumination, ventilation, the dust and smoke that nonetheless permeate the air, and even its heating system, which made it seem as though "the harshness of winter no longer existed, as though nature had suddenly been transformed into an earthly paradise."[46] In short, the arcades are cast as a highly-regulated enclosure, the ultimate nineteenth-century interior, whose technologically-produced atmosphere functioned as a "stimulus to intoxication and dreams […and..] involves, furthermore, an aversion to the open air, the (so to speak) Uranian atmosphere."[47]

This aversion to open air is important insofar as the management of atmospheric phenomena necessitates enclosure. As Steven Connor has argued, the study of air as a scientific and technological object was premised on the creation of an "enclosure in which states of exception from nature, or nature in a state of exception from itself, could exist and be observed."[48] If the containers of gas that Benjamin elsewhere describes represent this process of enclosure on a microscale, the arcades represent its expansion to that of the urban. Picking up where Benjamin's remark left off, Sloterdijk establishes this relationship more firmly, characterizing modernist architecture and urbanism as an "atmotechnology" moving towards progressively more hermetic "air-conditioned zones, which provide privileged air conditions relative to the general surroundings."[49] While less grandiose than the planetary technologies

[45] Walter Benjamin, *The Arcades Project*, trans. Howard Eiland and Kevin McLaughlin (Cambridge, Mass.: Harvard University Press, 1999), 102-103.
[46] Ibid., 38.
[47] Ibid., 216.
[48] Steven Connor, *The Matter of Air: The Science and Art of the Ethereal* (London: Reaktion Books, 2010), 18.
[49] Sloterdihk, 34.

imagined by Robida and Verne, interiors such as the arcades, greenhouses, the modern apartment, and, as we shall see, the film studio and the cinema itself, constituted the some of the most dazzling realizations of the late nineteenth-century dream of atmospheric design.

In the process, however, atmosphere also acquired a new form. Within the regulated interior of the arcades, as Benjamin observed, "the commodity proliferates along the margins and enters into fantastic combinations, like tissue in tumors."[50] No longer simply an object of research and design, the atmosphere of such spaces became a particularly diffuse form of the commodity. The transformation of 'nature' into an earthly paradise thus also constituted the ultimate phantasmagoria, acquiring a more sinister note. It is difficult to tell whether, for Benjamin, technology's potential to orchestrate a different relationship between the human and its environment could still hold any promise at this point in his career. In *The Arcades Project*, the confidence of the planetarium essay is dampened by a strong sense of ambivalence, which cast the arcades as a paradoxical figure of utopian dreams. On the one hand, its technological apparatus would seem to hold the potential to create *any* world; on the other, the only world it did create was that of paradise as a commodity.

In the Studio, Behind the Scenes

Drawing on many of the same technical resources, complete with functional enclosures, glass and iron architecture, electric generators, lighting equipment, ventilators, and a whole gamut of other materials and machines, the film studios of German silent cinema offer another site through which to consider the technological reorganization of the relationship between the human and a man-altered environment. In these spaces, commentators like Rudolf Kurtz saw the

[50] Benjamin, 42.

potential to create new worlds "from the ground up" in the wake of the First World War.[51] The discourse of film professionals writing in trade papers and the popular press speaks to a tremendous excitement at the creative possibilities of the cinema, and at least a coterie of favoured directors and their technicians seem to have worked with a high degree of freedom even in the context of large studios such as Ufa. As Thomas Elsaesser has observed, during the 1920s, Ufa treated each of its productions as an opportunity to tackle new problems in set design and trick effects, resulting in a highly experimental environment in which each film also contributed to the studio's longer-term research and development program.[52] Erich Pommer, the producer behind a suite of iconic films such as *Der letzte Mann* (1925), *Varieté* (1925), *Faust* (1926), *Metropolis* (1927), became famous for his dictum, "invent something new, even if it should be crazy."[53] Though this catchphrase is surely somewhat exaggerated, it is nonetheless borne out by the sheer variety of environments conjured up for Ufa's flagship productions, which ranged from the phantasmagoric urban milieu of *Asphalt* (1929), to the mist-filled forests of *Die Nibelungen* (1924), to the Rembrandt-like medievalism of Murnau's *Faust* (1926).

In what follows, however, these filmic atmospheres will be bracketed to focus instead on the environment in which they were produced. In this, I take methodological inspiration from Katharina Loew and Brian Jacobson, who have both demonstrated the peeking *hinter die Kulissen*, as it were, to consider the material infrastructure and discursive framework in which cinematic worlds came into being. Making substantial use of trade journals and film professionals' accounts, Loew's work has demonstrated the centrality of the technological to the artistic claims of Weimar cinema, characterizing the dominant ideology of the interwar film

[51] Kurz, 52.
[52] Elsaesser, 234.
[53] Pommer quoted in Klaus Kreimeier, *The Ufa Story: A History of Germany's Greatest Film Company, 1918-1945*, trans. Robert and Rita Kimber (New York: Hill and Wang, 1996), 104.

industry as one of "techno-romanticism."[54] Jacobson, on the other hand, has productively reframed studios as "technological systems for environmental control" and films as "human-built technological worlds," an insight that has more recently been taken up by Jennifer Fay as a sort of Anthropocene in miniature.[55] As we shall see, however, what distinguishes the particular situation of film production in interwar Germany, and thus makes the German film studio an especially productive site to think with, is the degree to which this look behind the scenes became a consciously orchestrated dimension of film promotion and key aspect of film reception. If the work of studio professionals nonetheless retained an aura of secrecy, this secrecy only made the tricks of the trade that much more effective as publicity tools.

Early studios in Germany made use of many of the same strategies of environmental control that made possible the production of specialized atmospheres in sites like the arcades. Principle among these was that of enclosure, the infrastructural prerequisite for any designed environment. Wolfgang Schivelbusch has emphasized the importance of glass and iron architecture to the creation of such enclosures, arguing that "ferro-vitreous architecture created a novel condition [in which] light and atmosphere were […] no longer subject to the rules of the natural world."[56] In this respect, it was perhaps less the arcades that served as a model than the greenhouse, an architectural type designed to enable the creation of environmental conditions that could either simulate those of exotic environments or produce entirely novel arrangements. This affinity between the film studio and the greenhouse was not missed by early commentators.

---

[54] Loew, 14. Loew defines techno-romanticism as an "inclination to construe technology as a means to evoke the imagination, emotion, and more generally the intangible or spiritual," arguing that this mindset paradoxically invoked the machine as a "safeguard of those essential human qualities under attack by the same rampant materialism," allowing "artists and intellectuals to affirm their fears about modernization and machine technology and simultaneously immerse themselves in the creative possibilities they afforded."

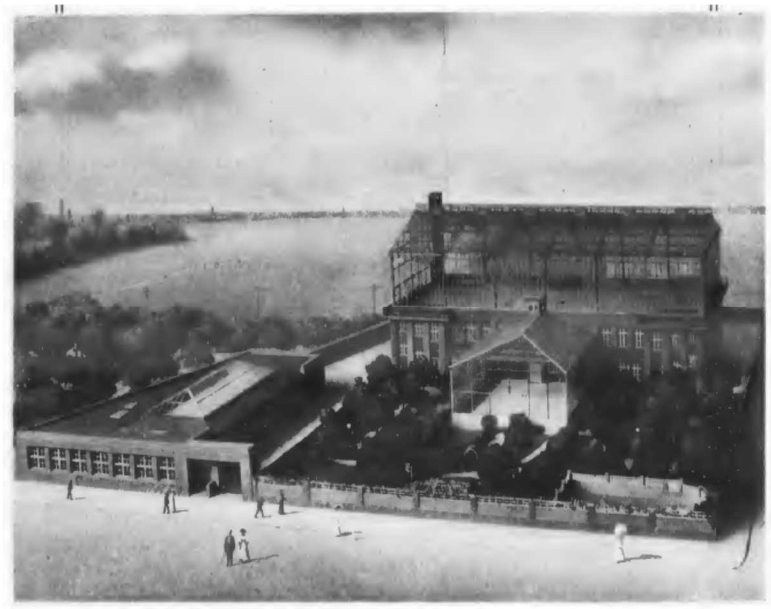
[55] Brian Jacobson, *Studios Before the System: Architecture, Technology, and the Emergence of Cinematic Space* (New York: Columbia University Press, 2015), 19.

[56] Wolfgang Schivelbusch, *The Railway Journey: The Industrialization of Time and Space in the Nineteenth-Century* (Berkeley; Los Angeles: University of California Press, 1986), 48.

"Gigantic, strange, and fantastic stand these glass palaces of film studios (*Aufnahmenhäuser*) amidst a bright landscape. [… They are] constructed out of a thousand giant glass plates: like a gigantic greenhouse (*Treibhaus*)," wrote the film director Max Mack in *Die zappelnde Leinwand* (1916), a whirlwind ode to Germany's booming film industry.[57] Indeed, such comments often evinced a fascination that prefigured Schivelbusch's discussion of glass architecture. "A new world, subject to its own laws, is expanding in the glasshouse," continued Mack, who held the possibility of "playing" with this world as the cinema's principal attraction for both viewers and makers.[58]

By the mid-1920s, Ufa boasted the largest such facilities in Europe. In 1918, the company had purchased a large lot with two enclosed studios located on the southern edge of Berlin's Tempelhofer Feld.[59] Built in 1913, Tempelhof's Literaria- and Union-Ateliers both took the form of a multi-story building crowned by a glazed rooftop studio, whose elevated position offered increased access to sunlight (Figure 2.6).[60] Although this building type represented an older model of studio construction, it remained quite serviceable, and it was in fact in the Union-Atelier that Murnau would film *Faust*.[61] Four years later, Ufa further expanded its production capacities through the acquisition of Decla-Bioscop's Babelberg facility, which included two freestanding, ground-level glasshouses that stood amidst a large, open field in Neubabelsberg, located just outside of Berlin. Built between 1912 and 1913, these glasshouse

[57] Max Mack, *Die zappelnde Leinwand* (Berlin: Dr. Ensler & Co., 1916), 10.
[58] Ibid., 96
[59] Kreimeier, 41.
[60] An article from 1913 describes the Union-Atelier and neighbouring Literaria-Atelier as standing like two "giant birdcages" in the middle of a more-or-less green field in the then-industrial area. Anonymous, "Die Glashäuser von Tempelhof," *Lichtbildbühne* 6, no. 24 (14 July 1913): 34.
[61] The film pioneer Oskar Messter began using such a rooftop studio in 1905. For more on this studio type, see Jacobson, 23-54. Jacobson emphasizes interaction with exterior elements in this type. Of course, by the time *Faust* was filmed, the studio had undergone multiple renovations, including the painting of the atelier's glass roof to convert the space into an artificial light studio.



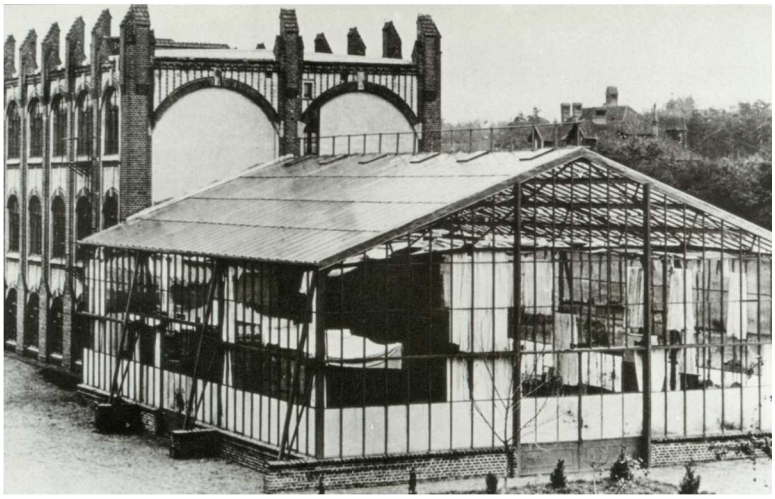


Figure 2.6: Photograph of the Union-Atelier in Berlin Tempelhof, published in *Lichtbilde-Bühne* 6, no. 23 (7 July 1913).

Figure 2.7: Photograph of the small glasshouse at Babelsberg Studio, in Potsdam. From: Babelsberg: Ein Filmstudio, 1912-1992. Berlin: Stiftung Deutsche Kinemathek, 1992.

studios were originally constructed under the supervision of the accomplished cameraman Guido Seeber, then technical director of the Deutschen Bioscop Gesellschaft (Figure 2.7). Comprising a total of 300 and 400 square meters of enclosed space respectively, the Babelsberg ateliers had the distinct advantage of facilitating the movement of props, set components, and machinery in and out of the studio space. In addition, the structures also boasted important innovations on the

technical and material level, making use of special putty-free glass and exterior struts to reduce cast shadows.[62]

Siegfried Kracauer, who visited Ufa's production facilities as a journalist in early 1926, emphasized the isolation of not only Babelsberg's enclosed halls, but also the entire *Filmstadt* itself, from the natural world around it. For Kracauer, Babelsberg stood as a "desert within an oasis. The natural things outside—trees made of wood, lakes with water, villas that are inhabitable—have no place within its confines."[63] Even more than Mack, Kracauer characterized the film studio as a zone of exception from nature, or rather, as a zone in which nature could be produced in a state of exception from itself. Nonetheless, the glasshouse studio remained highly reliant on the surrounding environment, a fact that sometimes places cinema—the urban medium par excellence—at odds with the urban environment. As Urban Gad explained, "because of photographic reasons, the film studio [*Filmfabrik*] requires ample sunlight and for this reason cannot be located in a smoky and dusty city. It must be housed in an open suburb, where there are no belching smokestacks."[64] Ironically enough, the construction of environments within the studio, for all the freedom its enclosed space permitted, nonetheless remained dependent on not only light but also air quality, requiring a certain atmospheric clarity beyond the studio walls.

This dependence on the external environment would be substantially reduced with the 1926 expansion of the Babelsberg facility. The chief achievement of this expansion was the

---

[62] Corinna Müller, "Licht-Spiel-Räume," in *Babelsberg: Ein Filmstudio, 1912-1992*, ed. Wolfgang Jacobsen (Berlin: Stiftung Deutsche Kinemathek and Argon Verlag, 1992), 9-10.
[63] Siegfried Krakauer, "Calico-World," *The Mass Ornament: Weimar Essays*, trans. Thomas Y. Levin (Cambridge, Mass.: Harvard University Press, 1995), 281.Originally published as "Kaliko-Welt: Die Ufa-Stadt zu Neubabelsberg," *Frankfurter Zeitung* 70, no. 72 (28 Jan. 1926), f. 1-2.
[64] Urban Gad, *Der Film: seine Mittel—seine Ziele* (Berlin: Schuster & Loeffler, 1921), 48. For a more detailed discussion of the impact of dust on filmmaking practices, see Paul Dobryden, "Clouded Vision: Particulate Matter in F.W. Murnau's *Faust*," *Modernism/Modernity* 227, no. 4 (November 2020): 707-733.

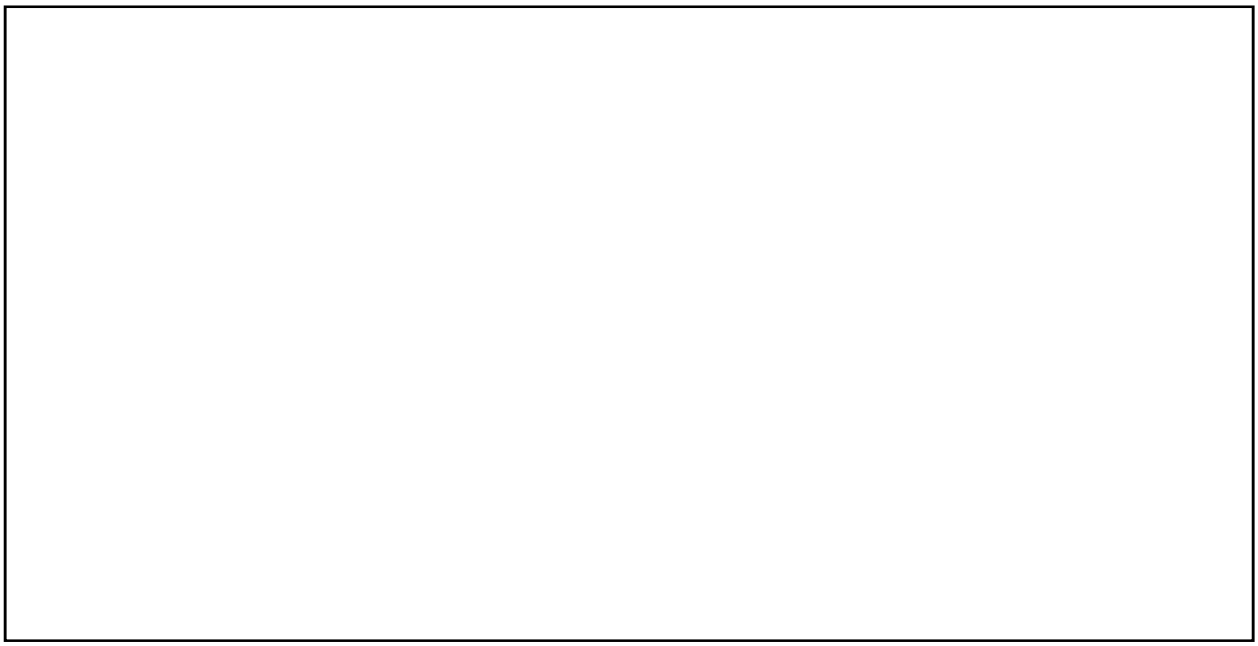


Figure 2.8: Aerial view of Babelsberg Studio circa 1930, with Ufa's sound studio in the mid-ground, and the Große Halle in the background. From: Babelsberg: Ein Filmstudio, 1912-1992. Berlin: Stiftung Deutsche Kinemathek, 1992. This image has not been included for reasons of copyright.

construction of the so-called Große Halle, which would be christened that same year with the production of Fritz Lang's *Metropolis* (1927). An article celebrating this new atelier, which appeared in the *Reichsfilmblatt* in December 1926, reported with evident enthusiasm that it placed a total of 6888 square meters—amounting to some 20,000 cubic meters—of enclosed space at the disposition of filmmakers.[65] The most important innovation of the Große Halle, however, was its abandonment of the glasshouse model in favour of an American-style artificial light studio (Figure 2.8). Discussing this latest studio type, Kracauer observed, with some evident anxiety, that since the sun "does not function nearly as reliably as floodlights, it is simply locked out of the latest film studio interiors."[66] Another reviewer, writing for the *Ufa-Programm* of 1925/1926, marveled at the facility's electrical independence: "Neubabelsberg is an industrial concern that can produce its entire needs on site. A powerplant translates a high-tension current

[65] Günther Herkt, "Das großste Filmatelier Europas," *Reichsfilmblatt* 51 (22 Dec. 1926): 48.
[66] Kracauer, 285.

of 10,000 volts in three transformers into normal direct current, and delivers enough power for about 15,000 amperes of light consumption."[67] These technological innovations granted the Ufa a high degree of independence not only from nature, but also from the national infrastructure of the country at large.

It was in these spaces that filmmakers created the fantastic worlds for which German silent cinema is today best remembered. Though many of cinema's world-building strategies involved models and trick shots, such as the forced perspective used to create the streetscape in *Der letzte Mann* or the Schüfftan process employed in *Metropolis*, the sheer amount of physical construction that went into such films should not be underestimated.[68] For Joe May's *Asphalt*, an entire city street measuring some 230 meters in length was constructed, decorated with neon signs and paved with real asphalt, which appropriately reflected the thousands of lightbulbs shining throughout the set.[69] On some occasions, production teams even incorporated elements of the so-called natural world into their designs. While visiting the set of *Das Testament des Dr. Mabuse* for *Film-Kurier*, for instance, Lotte Eisner encountered the strange sight of a deconstructed forest being rearranged piece by piece before her eyes: "Felled trees are hauled around […], transported on wooden pallets and then placed in the ground where their creator, Lang, determines they should stand. Lang himself joins in the work, fetching a few shrubs, which he plants where he wants them. Long-stemmed grass blades are stuck into the ground one

[67] *Ufa-Programm 1925/26*, cited in Karl Prümm, "Empfindsame Reisen in die Filmstadt," in *Babelsberg: Ein Filmstudio, 1912-1992*, ed. Wolfgang Jacobsen (Berlin: Stiftung Deutsche Kinemathek and Argon Verlag, 1992), 117. For more on Ufa's artificial light studio, also see Werner Südendorf, "Kunstwelten und Lichtkünste," in *Babelsberg: Ein Filmstudio, 1912-1992*, ed. Wolfgang Jacobsen (Berlin: Stiftung Deutsche Kinemathek and Argon Verlag, 1992), 57-59. For more on the significance of these artificial light studios within the context of Weimar electrification and visual culture, see Janet Ward, *Weimar Surfaces: Urban Visual Culture in 1920s Germany* (Los Angeles: University of California Press, 2001), 146.

[68] For a more detailed discussion of the Schüfftan process, see Loew, 89-91.

[69] Tim Bergfelder, Sue Harris, and Sarah Street, *Film Architecture and the Transnational Imagination: Set Design in 1930s European Cinema* (Amsterdam: Amsterdam University Press, 2007), 124. The amount of electricity used on the set was reported to have equalled to the daily usage of a medium-sized city.

by one. […] The living nature is shuffled around and restructured some more."[70] Klaus Kreimeier has aptly described the logic of such productions as a sacrificial one, in which the destruction of nature is the precondition for its presentation on screen.[71]

Kracauer likewise pointed to the violent fragmentation of the world into discreet components to be produced, combined, or destroyed according to the whims of the filmmaker and studio. Nonetheless, what Kracauer objected to was less this fragmentation than its reunification in the finished film, which he described as an attempt to "organize the visual material—which is as disorganized as life itself—into the unity that life owes to art."[72] Where the pictorial photographers discussed in the last chapter strived towards precisely such a goal, Kracauer regarded this operation as highly suspect. If the jumble of architectural models, props, and other bits of organic and inorganic materials that one found in the studio held the potential, for Kracauer, to undermine the apparent naturalness of reality and suggest the possibility of arranging the world differently, the suturing of these fragments into a "little whole" telling the story of a "social drama, historical event, or women's fate" represented nothing less than the foreclosure of cinema's radical potential.[73]

When one contextualizes Kracauer's article within the larger context of interwar film discourse, however, a somewhat more complicated picture emerges. For although his critique might well apply to any number of Ufa productions, the public discourse that surrounded these films was filled with glimpses into the studio's calico-world. Indeed, Kracauer's text might be

[70] Lotte Eisner, "Ein Wald wird unmontiert: Fritz Lang beginnt zu drehen," *Film-Kurier* (3 Oct. 1932): np.
[71] Kreimeier, 106.
[72] Kracauer, 288. In addition to building new artificial light studios, older glasshouse studios like the Tempelhof facilities were also converted into glasshouse studios by painting their roofs with blue paint. See Alexander Kossowsky, "Die Filmateliers der Ufa in Berlin-Tempelhof," *Film-Kurier* 239 (9 Oct. 1924): np; Hermann Treuner, "Die Geburtsstätte des Films," *Ufa-Magazin* 1, no. 8 (8-14 Oct. 1926): np.
[73] Kracauer, 288.

situated within a larger genre of film journalism, the studio visit article.[74] This practice was actively encouraged by Ufa and other production firms, who clearly understood the publicity value of such peaks behind the scenes. Ufa not only regularly invited journalists to visit the sets of large productions and witness particularly elaborate effects, such as the flight around the earth sequence in *Faust* or the flooding of the worker's city in *Metropolis*, but also frequently published production reports authored by cameramen, film architects, and directors.[75] This practice reached a fever pitch with the large scale productions of the mid to late-1920s, such as *Faust, Metropolis,* and *Frau im Mond*, which left paper trails that reached as far back as a year before their release dates. As Katharina Loew has observed in relation to the publicity campaign for *Metropolis*, the rhetoric of the technological sublime, that one finds in both Kracauer and Eisner's reports was highly characteristic of the tenor of such journalism, which could be sincere, ironic, or some mixture of the two.[76]

To this end, Ufa also established its own photography department, which in addition to portraits of stars and directors, was also responsible for production stills featuring the film sets and crews at work. These photographs would then be placed in both film magazines and general interest publications like the *Berliner Illustrirte Zeitung* and *Tempo*.[77] Unsurprisingly, Ufa's house publication, the *Ufa-Magazin* (later *Film-Magazin*), regularly featured such photographs in recurring features such "Wie ein Film entsteht" and "Wie es echt wurde," which contrasted still photographs taken from the perspective of the camera with production photographs showing

[74] Most of the primary sources cited in this chapter can be viewed as part of this sub-genre of film journalism.
[75] Tom Saunders, "Studioführungen nach Mass," in *Babelsberg: Ein Filmstudio, 1912-1992*, ed. Wolfgang Jacobsen (Berlin: Stiftung Deutsche Kinemathek and Argon Verlag, 1992), 87.
[76] Loew, 204.
[77] For example, all of the following articles featured production stills from *Faust* and *Metropolis*, both of which began production in late 1925. Anonymous, "Neues vom Film," *Berliner Illustrirte Zeitung* 35, no. 2 (10 Jan. 1926): 36; Anonymous, "Wie sich der Film die Zukunft vorstellt,"*Berliner Illustrirte Zeitung* 36, no. 1 (2 Jan. 1927): 36-37; and Kurt Muhsam, "Verrat filmischer Geheimnisse," *Tempo: Magazin für Fortschritt und Kultur* 1 (1927): 42-45.

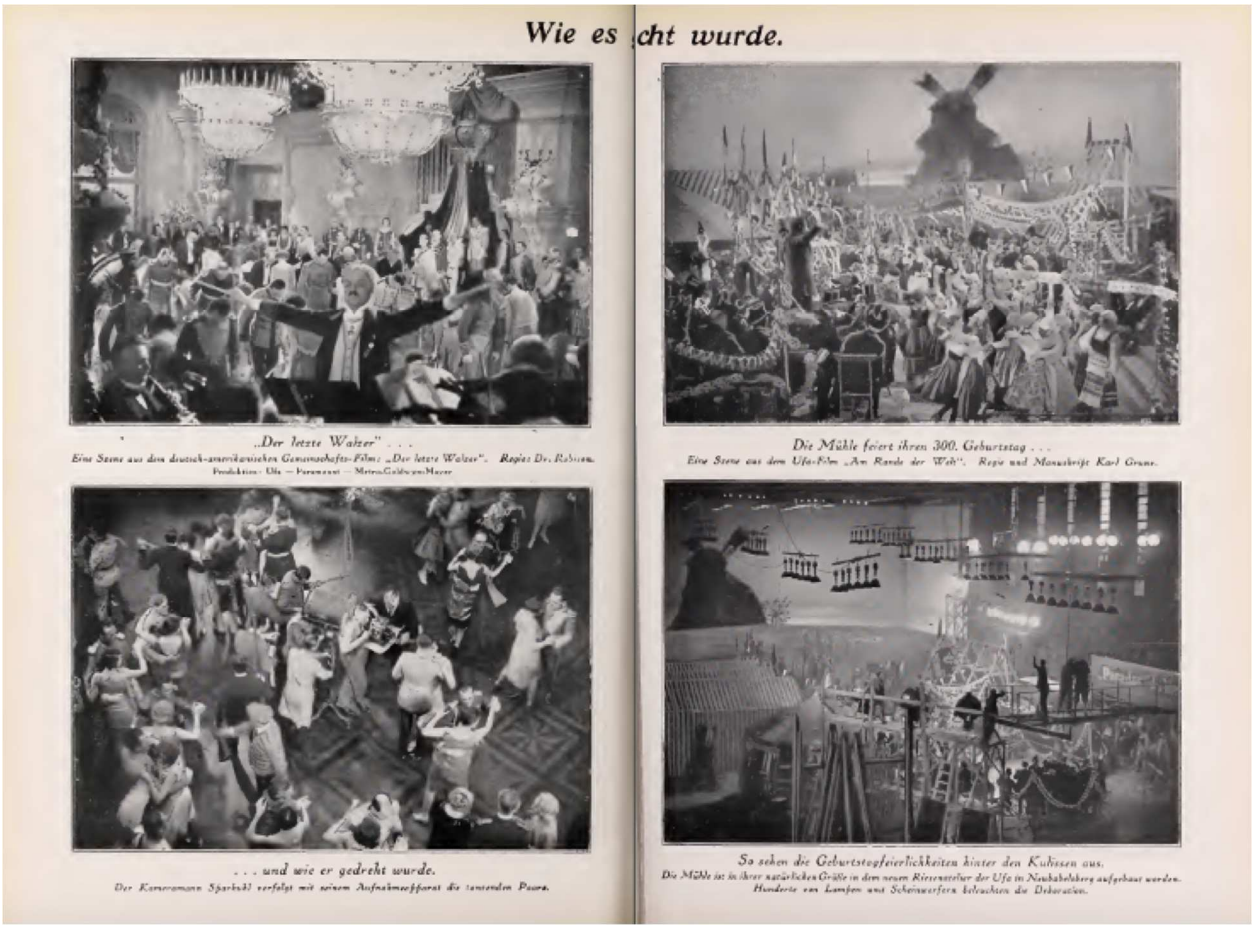


Figure 2.9: "Wie es echt wurde," a two-page spread from *Ufa-Magazin*, March 1927.

unconventional camera set-ups, models, and the larger studio space complete with hanging lamps and floodlights (Fig. 2.9).[78] Though such photographs rarely revealed enough to jeopardize trade secrets, this promotional discourse nonetheless had the effect of pushing the fragmentary world of the studio into the public sphere, encouraging viewers to shift their attention between the finished film and its means of production.

Far from disenchanting, these glimpses behind the scenes frequently revealed the studio as a space that was as—if not more—fantastic than the worlds presented on the screen. Perhaps

[78] For example, see the following, which represent only a fraction of such features: Anonymous, "Wie es echt wurde," *Ufa-Magazin* 2, no. 11 (11-17 Mar. 1927): np; Anonymous, "Wie ein Film entsteht—III. Das Leben einer Dekoration," *Ufa Magazin* 2, no. 19 (6-12 May 1927): np; and Anonymous, "Aus der Werkstatt," *Ufa-Magazin* 2, no. 23 (3-9 June 1927): np.

Figure 2.10: Horst von Harbou, production photograph from the set of *Frau im Mond* (Dir. Fritz Lang, 1928/9), showing the film crew, camera, scaffolding, and lights. Cinémathèque française, Paris.

one of the most successful production stills comes from the set of Fritz Lang's *Frau im Mond* (1929), a film whose publicity campaign, which was intended to feature a live rocket launch corresponding with the film's premiere, rivalled even that of *Metropolis*.[79] The photograph in question presents the prospect of an expansive lunar landscape, which despite the visible presence of wood scaffolding below and studio lights hanging from the ceiling above, seems almost planetary in scale (Fig. 2.10).[80] To create this landscape, which measured a total of 3000

[79] This rocket launch never occurred, though substantial time and money was invested in it. For more on the publicity campaign surrounding this film, see Tom Gunning and Katharina Loew, "Lunar Longings and Rocket Fever," in *A Companion to Fritz Lang*, ed. Joe McElhaney (New York: Wiley & Sons, 2015), 554-586.

[80] Horst von Harbou, the brother of Lang's wife and collaborator Thea von Harbou, served as the photographer on set for this film. Horst von Harbou began his career as a set photographer in 1925 with *Die Nibelung* and worked on a number of other Ufa productions. His photographs for *Frau im Mond* were later compiled, likely on Lang's initiative, into an album, which Lang brought with him when he left Germany in 1933. This album, which is

square meters, Lang had forty cartloads of sea sand hauled into the studio, which was then baked to achieve the blanched quality deemed appropriate to the dry atmosphere of the moon.[81] The sheer scale of this undertaking is dramatized by the inclusion of three crew members on an outcrop in the foreground, their small figures dwarfed by the manufactured landscape before them. If the finished film introduced viewers to a never-before-seen world, production photographs such as these were calculated to astonish viewers with the spectacle of such a world's creation.

Indeed, for many commentators, the studio itself came to resemble a strange new world, in which the technological came to uncannily mirror the natural world. "It was as if I were a stranger in an exotic landscape," wrote Lotte Eisner in her autobiography, reflecting on her first visit to the film studio, "everything seemed to me like a jungle."[82] Eisner elsewhere elaborated on this theme, describing masses of tangled cables that she encountered on Lang's set as "enormous jungle roots, like entangled snakes, creeping through the grass and moldering forest floor, as if they too were a part of it."[83] Bringing together the vegetal and the electrical, this jungle motif extended the vocabulary of the greenhouse that was already central to the studio in order to suggest a space in which natural and manmade forces mingled to such an extent as to become indistinguishable. For critics like Eisner, as much as Mack and Kracauer, the attraction of the studio clearly lay in this mingling. To peak behind the scenes thus offered more than just a chance to uncover production secrets; rather, it offered a look into a world that epitomized the

currently housed in the collection of the Cinémathèque française (having entered the collection through Lotte Eisner's initiative), includes an extensive series of photographs documenting the construction of the lunar landscape.

[81] Anonymous, "Mondgebirge in Neubabelsberg," *Film-Magazin* 16 (21 Apr. 1929): np.

[82] Lotte Eisner, *Ich hatte einst ein schönes Vaterland: Memorien*, 84

[83] Eisner, "Ein Wald wird unmontiert: Fritz Lang beginnt zu drehen," np.

physical and epistemological instability of modernity, an instability which was at once thrilling and deeply disquieting.

The Studio and its Artificial Clouds

If the enclosed interiors, power generators, artificial lights, and constructed sets of the studio granted filmmakers unprecedented possibilities to construct worlds both strange and familiar before the camera, these elements alone were not enough to produce the atmospheres that characterize Weimar art cinema. Carl Hoffmann, the cameraman on Murnau's *Faust*, said as much in an article that accompanied the film's release in 1926: "The most difficult task was not to shoot the landscapes constructed in the studio (that was nothing new), but to create atmospheric Stimmungen, such that even a specialist would not be able to recognize the difference between location and studio shots."[84] To this end, film professionals became adept in the production and manipulation of atmospheric phenomena, developing in the process a whole typology of artificial clouds, each with their own physical and visual characteristics. The production of these artificial clouds forms the subject of this last section, which aims to place the atmospheres of Weimar cinema into conversation with both the physical environment of the studio and the changing environment of interwar modernity. In doing so, my goal is less to proffer the cinema as a kind of Anthropocene in miniature, as Jennifer Fay has recently suggested, than it is to excavate the sheer ambivalence with which this development was greeted. For if the cinema, on the one hand, seemed to make good on the fantasies of atmospheric design, it was also a site in which the vulnerability of the body to a man-altered environment was negotiated on both material and representational levels.

[84] Cark Hoffmann, "Kleine Geheimnisse um den Faust-Film," *Film: Neues und Altes vom Kino* 10 (May/June 1981), 46. Originally published in *Ufa-Pressedienst* 151 (30 Oct. 1926).

Figure 2.11: Actors suspended amidst smoke, stills from *Faust* (Dir. F.W. Murnau, 1926).

Though a close attention to atmospheric elements, as we have seen, spanned cinematic genres, it was without a doubt in that of the fantastic that this aesthetic saw its most complete articulation. In films such as *Der Golem* (1920), *Der müde Tod* (1921), and *Die Nibelungen* (1925), we encounter atmospheres of a remarkable thickness, impregnated with mist, fog, smoke, and clouds, which grant the filmic image both expressive and spatial coherence. As I have already suggested, this embrace of the nebulous reached its pinnacle with Murnau's *Faust*. Lotte Eisner later described this film as a triumph of "German chiaroscuro," celebrating the "chaotic density of [its] opening shots, the light dawning in the mist, the rays beaming through the opaque air, and the visual fugue which diapasons round the heavens."[85] As Eisner's active language

[85] Lotte Eisner, *Murnau*, 285.

suggests, atmosphere, in Murnau's film, is never static or stable, but always in motion, animating both the image and the world presented on screen. Indeed, the camera is at times so preoccupied with atmospheric motion that the physical set is dispensed with entirely, leaving actors unmoored amidst swirling clouds of smoke (Fig. 2.11).[86]

Like the early cinema spectators fascinated by the movement of the wind in the leaves, interwar commentators evinced no small degree of enthusiasm for the way a gust of wind, rolling cloud, or rising smoke could abruptly transform the cinematic image, and this fascination obtained as much in the context of studio production as it did in that of location shooting, if not more. The production of atmospheric effects within the studio was a frequent subject of production reports and studio visits, as though no article was complete without the mention of a sudden storm, fire, flood, or blizzard, conjured up for the camera out of the most outlandish materials.[87] Illustrators and photographers, too, delighted in picturing the strange contraptions filmmakers devised to manufacture cinematic weather, the more cataclysmic the better (Fig. 2.12). As one reviewer commented after treating his readers to a catalogue of natural disasters, "all of this is nothing too difficult for the modern film director in the modern glasshouse. A whole complicated machinery of natural forces [*Naturgewahlten-Machinerie*] stands at his

[86] The German press, which on the whole reacted rather negatively to the film, singled out these effects for praise. Karl Pinthus, for instance, commented "Carl Hoffmann's thousand-toned photography, Herlth and Röhrig's sets, the tricks, the landscape […] are more enchanting than the magician himself." On the other hand, Pinthus could not resist poking fun at the film's heavy atmospherics: "Every time Faust (or the director) doesn't know what to do next, you see him, mostly on rock, wrapped in smoke, as though he takes a steam bath every time he's upset." Kurt Pinthus, quoted in *Das Ufa-Buch: Kunst und Krisen, Stars und Regisseure, Wirtschaft und Politik: Die international Geschichte von Deutschlands grössten Film-Konzern*, eds. Hans Michael-Bock and Michael Tötenberg (Frankfurt am Main: Zweitausendeins, 1992), 117.

[87] In this sense, writers such as Eisner and Kracauer's fascination with the filmmaker's ability supplant nature might be situated in a tradition reaching back to the reflections on stagecraft that opened Goethe's *Faust*: "As you well know, these German theatres / let everyone do exactly as he wants; since that's the case, this is no time to stint on scenery and stage effects. / Put both the sun and moon to use, / be lavish with the stars and planets / nor are we short of fire or water, / of precipices, birds, or beasts, / So now upon our modest stage act out / creation in its every aspect / and move with all deliberate haste / from heaven, through the world, to hell!" Johann Wolfgang von Goethe, *Faust I & II*, ed. and trans. Stuart Atkins (Princeton: Princeton University Press, 1984), 7.

VERRAT FILMISCHER GEHEIMNISSE

VON DR. KURT MUHSAM

● Der Film, dieses Mittelding zwischen Kunstwerk und Industrieprodukt, erfüllt dann seinen eigentlichen Zweck, wenn er im schwarz-weiß Bild Szenen oder Vorgänge zeigt, die keine andere Kunstgattung und kein anderes technisches Hilfsmittel in gleicher oder ähnlicher Weise hervorzubringen vermag. Nicht die Wiedergabe von „Literatur", nicht die Nachdichtung dramatisierter Romane, erprobter Opern oder Operetten kann die Existenzberechtigung des Films erweisen, sondern viel eher alles das, was den Beschauer des Bildstreifens in höchstes Erstaunen versetzt, das Unmögliche, das die Kinematographie möglich macht, wenn sie es zuwege bringt, die primitivsten Gesetze der Vernunft und das Einmaleins der Physik scheinbar auf den Kopf zu stellen. Wenn ein Auto in rasender Fahrt über die Dächer von Wolkenkratzern flitzt, über die Landschaft jagende Pferde einen hundert Meter hohen steilen Abhang hinunterstürzen, wenn man das Gras wachsen sieht oder Mutter und Tochter, von der gleichen Schauspielerin dargestellt, gleichzeitig auf der Scene sich tummeln, wenn die Zauberwelt des Märchenreiches zum wirklichen Leben erweckt scheint, wenn Paläste aus der Erde wachsen und Menschen in die Luft hineni verschwinden — wenn der Regisseur die Möglichkeit hat, in jedem Augenblick über eine andere Naturerscheinung zu verfügen, in allen diesen Bildern kann der Kinematographie keine Erfindung entgegengestellt werden, die ihr Konkurrenz zu machen imstande wäre.

In den seltensten Fällen nur ahnt das Publikum, auf welch einfachen Wegen die oft so schwierig aussehenden Szenenaufnahmen zustande gekommen sind, und ebenso selten vermag das Publikum das Rätsel des angewandten Filmtricks zu lösen. Und findet der Laie schon

In der Wolkenfabrik phot. Ufa
Watte wird auf die „Berge" gelegt

Figure 2.12: Illustrations and photographs from the popular press showing the manufacture of cinematic weather, from the *Berliner Illustrirte Zeitung* (1921), *Scherl's Magazin* (1929), and *Tempo* (1927), respectively. The last of these notably features the construction of fiberglass clouds for the flight around the world sequence in Faust.

disposition."[88] More than any manufactured landscape, these simulated weather events epitomized the eclipse of the natural world within the paradigmatically 'modern' space of the film studio, as the reviewer's repetition insists. The measure of achievement, here, was less building a world then setting it in motion.

To this end, the studio frequently came to resemble something close to a chemical—or better yet, alchemical—laboratory. This was especially true in the case of *Faust*, Ufa's definitive statement on the film alchemist. To produce the dense and mobile chiaroscuro that Eisner so prized, Murnau and his team—like Faust, who we first encounter bent over glass vessel, from which vapors overflow (Figure 2.13)—engaged in a host of chemical experiments. In one report from the set, Robert Herlth described Murnau, alight with an "almost childish glee," testing and re-testing the various steam apparatuses, making "mist pour and lakes overflow" until the air and floor of the studio were nearly flooded.[89] Production accounts such as these were typical of Ufa's publicity campaign, which was quick to capitalize on the analogy between the heavy-robed alchemist and filmmaker clad in a white lab coat (Figure 2.14). In the months preceding the film's release, the studio regularly churned out articles and photographs with titles such as "The Demon in the Glasshouse" or "A Modern Magician," referring, in the latter case, to the camera operator Hoffmann.[90] Hoffmann himself offered a vivid account of the studio environment during the film's production, clearly taking some pride in the complicated machinery it required:

> Imagine the large space of the atelier. Unchained fire extinguishers, steam, streaming out of dozens of pipes, in addition to fumes from all kinds of acids, all of which is stirred into chaos by airplane engines—that should give you some idea of the scene of conjuration [*Beschwörungsformel*].[91]

---

[88] Erwin Wolfgang Nack, "Naturgewahlten im Filmatelier," *Film und Volk* 2, no. 4 (May 1929): 7.
[89] Robert Herlth, "Ezbosos de F.W. Murnau," translated and reprinted in Luciano Berriatúa, *Los Proverbios chinos de F.W. Murnau* (Madrid: Filmoteca Española, 1990), 328. Originally published in *Film für Alle* (18 April 1931).
[90] For more on the equation of film production and magic, see Loew, "Techno-Romanticism," 39-81.
[91] Hoffmann, 46.

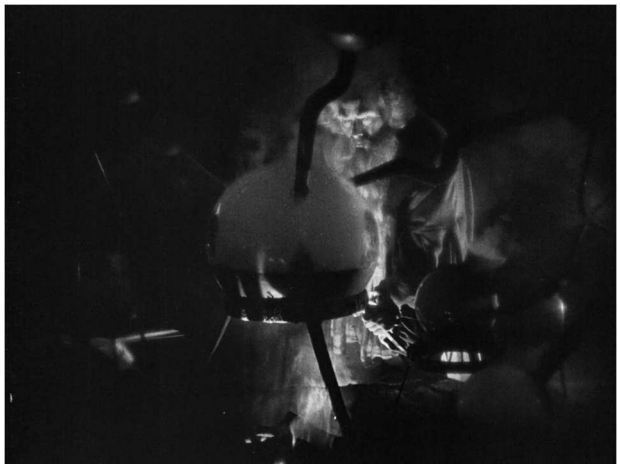


Figure 2.13: Faust as introduced during the Prologue in Heaven sequence, still from *Faust* (Dir. F.W. Murnau, 1926).
Figure 2.14: Gösta Eckman as Faust and F.W. Murnau in white lab coat, outside the Union-Atelier in Berlin Tempelhof, ca. 1925. Filmmuseum Berlin - Deutsche Kinemathek.

Firmly linking film production and magical conjuring, accounts such as these deployed the atmospheric as a mediator between the world on screen and the world of the studio, casting the latter, to great effect, as an almost infernal domain.

If Hoffmann's article knowingly played up the chaos on set for promotional purposes, other texts from the period, written with a professional audience in mind, suggest a more efficient, indeed, scientific, mode of operation. In an article that appeared in the trade journal *Filmtechnik*, for instance, Guido Seeber walked his readers through a series of different strategies for creating various types of smoke and fog effects, from the quick flash produced by setting gun powder on fire, to a heavier white smoke that could be produced through a mixture of ammonia, hydrochloric acid, and water, to still more outlandish means (Figure 2.15).[92] What is most striking in Seeber's article, however, is not the techniques themselves, but fine distinctions that the cameraman is able to make between the types of smoke obtained by each method, their distinct visual qualities and physiochemical behaviour, and the way these properties might

[92] Guido Seeber, "Rauch und Nebel," *Filmtechnik* 4, no. 14 (1928): 262.

262 FILMTECHNIK 1928. Nr. 14

DIE TECHNIK DES FILMS

DER KAMERAMANN

Rauch und Nebel.

Von Guido Seeber.

Schon in der Kindheit der Kinematographie hat man es versucht, die Wirkung gestellter Dekorationen mit Hilfe künstlich nachgebildeter Naturerscheinungen zu erhöhen. So haben die ehemals besonders von Méliès[1]) in Paris, aber auch von anderen Filmherstellern für irgendwelche Trick- oder Illusionswirkungen benutzten Rauchwolken früh eine bedeutende Rolle gespielt. Allerdings hat der Film in Ermangelung besonderer für ihn erdachter Ausführungsformen zunächst auf diesem Gebiete auch die Methoden und Erfahrungen der Theaterbühne übernommen.

Bei der einst beliebten Art, z. B. eine Figur in der Teufelsmaske aus der Rauchwolke erstehen und auf dem gleichen Wege verschwinden zu lassen, bediente man sich durchweg des Schwarzpulvers. Man legte ein kleines Häufchen schwarzen Schießpulvers an die Stelle, wo die Figur erscheinen sollte und entzündete dieses entweder mit einer Lunte oder elektrisch. Der betreffende Darsteller wurde hinter ein Dekorationsstück in möglichster Nähe des Pulverhäufchens versteckt, um im Augenblick des Entstehens der Rauchwolke sich hinter diese zu stellen und sie durch Armbewegungen möglichst zu zerstreuen bzw. durchscheinend zu gestalten. In gleicher Weise ließ man die Person verschwinden,

indem diese zunächst hochsprang, um dann rasch eine Hockstellung einzunehmen, worauf die Aufnahme unterbrochen, der Schauspieler entfernt, an seine Stelle wieder ein Pulverhäufchen gelegt, es zur Entzündung gebracht und neu losgekurbelt wurde. Nach Ausschneiden einiger Einzelbilder konnte dieser Effekt zu einer wirkungssicheren Täuschung des Zuschauers geführt werden.

Eine noch vollkommenere und nachhaltigere Wirkung wird erzielt, wenn man das Schießpulver mit gewöhnlichem Mehl zu gleichen Teilen mischt. Das abbrennende Schwarzpulver reißt das so beigemischte Mehl mit in die Luft und gestaltet die Rauchwolke nicht nur dichter, sondern verlängert auch ihre Dauer.

Vielfach wird zur Darstellung bestimmter Vorgänge schwerer Rauch benötigt. Der Herstellung solchen Rauches dient auf der Sprechbühne eine Einrichtung, die aus drei gleichgroßen Flaschen besteht und in unserer Abbildung schematisch veranschaulicht wird. In der ersten Flasche befindet sich Ammoniak, in der zweiten rauchende Salzsäure und in der dritten gewöhnliches Wasser. Sämtliche drei Flaschen sind mit Korken versehen, die je zwei Durchbohrungen aufweisen. In die erste Flasche ragt durch eine Bohrung des Korkes eine Glasröhre bis fast auf den Boden des Gefäßes. Ein zweites Rohr endet dicht unterhalb des Korkes und führt in die zweite, mit Salzsäure angefüllte Flasche, ebenfalls durch die Korkendurchbohrung bis fast zum Flaschenboden. In gleicher Weise ist die Salzsäure enthaltende Flasche mit der dritten, die mit Wasser gefüllt ist, verbunden. Schließlich ist in die zweite Bohrung des Korkens der dritten Flasche ein im rechten Winkel gebogenes Glasrohr eingesteckt, dessen eine Seite dicht unter dem Korken endet, während die andere offen ins Freie zeigt. Alle drei Gefäße sollen nur etwa bis zu ihrer halben Höhe mit den vorgenannten Flüssigkeiten gefüllt sein. Wird nun in der ersten Flasche, die Ammoniak enthält, in das Rohr, das in die Flüssigkeit eintaucht und dicht über dem Boden endet, Luft geblasen, so strömt nach kurzer Zeit aus dem dritten Gefäß durch die sich beim Durchblasen vollziehende chemische Bindung ein weißer, schwerer, ungefährlicher Rauch. Wenn die Lufttemperatur nicht zu hoch ist, so bleibt der Rauch verhältnismäßig lange auf dem Boden liegen und kann durch Bewegung der Luft in irgendeine gewünschte Richtung gelenkt werden. Um nun eine gleichmäßige und dauernde Raucherzeugung zu sichern, ist es zweckmäßig, diese kleine Rauchentwicklungseinrichtung an eine Flasche mit komprimierter Luft anzuschließen, deren Reduzierventil man bis auf etwa $^1/_{10}$ Atmosphäre eingestellt hat. Diese gewöhnliche Preßluft enthaltenden Flaschen sind entweder zum Füllen der Automobilschläuche oder für Spritzapparate, wie sie in Filmateliers von dem Maler verwendet werden, zu finden. Wird ein solcher Rauchapparat sehr hoch aufgestellt, so wird der erzeugte Rauch langsam von oben nach unten sinken. Bei windstillem Wetter kann er auch wirkungsvoll im Freien benutzt werden, und bei der gleichzeitigen Verwendung mehrerer solcher Einrichtungen sind derartig bedeutende Rauchwolken zu erzeugen, daß mitunter eine ganze Dekoration vernebelt werden kann.

Wenn in einem oder anderem Fall die Szene aus dem vernebelten in ein klares Bild allmählich übergehen soll, so läßt sich dies dadurch leicht einrichten, daß man den Vorbau — wie ein solcher wohl an jeder Kamera zu finden sein wird — stark mit Zigarren- oder Zigarettenrauch anfüllt und zur Verhinderung eines schnellen Abziehens mit einer Glascheibe abdeckt. Will man die Entnebelung beschleunigen, so genügt es, beim Drehen die Glasscheibe zu entfernen und durch Hinpusten — schräg von vorn — den Rauch zum Abziehen zu bringen. In gleicher Art kann man ein Bild auch vernebelt enden lassen, wenn man dasselbe Verfahren anwendet und die Szene rückwärts kurbelt. Es versteht sich jedoch, daß man hierbei auf spiellose Darstellungen beschränkt bleibt.

Ein bei Filmaufnahmen verschiedentlich angewandtes Rauchmittel repräsentiert die brennende Filmrolle. Man nimmt etwa 30—50 m zu einer Rolle aufgewickelten unbrauchbaren Film und befestigt an diesem einen längeren kräftigen Draht. Wird nun die Rolle entzündet, so daß sie mit guter und kräftiger Flamme brennt und in diesem Zustand in ein Gefäß mit Wasser getaucht, so bewirkt dieses Untertauchen kein Verlöschen, sondern weiter fortschreitende Zersetzung. Hebt man nach kurzer Zeit die Filmrolle aus dem Wasser, so beginnt sie

1) Vgl. „Filmtechnik", Jahrg. III, Nr. 16, S. 295—297: „Trickfilme aus alter Zeit". Von D. A. Rabier.

Figure 2.15: Guido Seeber, "Rauch und Nebel," *Filmtechnik* (1928). Pictured is a diagram showing how to produce smoke from ammonia, hydrochloric acid, and water.

interact with environmental conditions (such as air temperature and wind), or be modified by additional technical contrivances (for example, systems of pipes, compressed air cans, or aerosol containers).[93] Following Seeber, we might consider the film professional a kind of connoisseur of smoke whose professional competence included a deep awareness of how different types of smoke might interact with light, space, and photochemical emulsion.

[93] For example, Seeber describes the smoke produced through the ammonia-hydrochloric acid mixture as a "white, heavy, harmless smoke" that, when the air temperature isn't too hot, "remains on the ground for a relatively long time and can be directed in whatever direction desired through the movement of the air." Ibid.

Here we might return once more to Paul Wegener's discussion of cinema's artistic potential and the inorganic chemistry upon which it depended. For as much as Wegener's imagined film looked forward to the abstraction of absolute film, its optical lyricism of fermenting chemicals might also be regarded as the blueprint for the atmospheric effects that characterize some of the most audaciously fantastic episodes of Weimar cinema. To invoke just one example, we might consider the smoke effects employed for the conjuring sequence of Wegener's *Der Golem*, shot at Tempelhof in 1920. The effect in question begins with the rabbi tracing a circle on the floor of his laboratory. No sooner is the circle closed than thick clouds of smoke leap upwards, glimmering like fire beneath the overhead spotlights. Carl Boese, Wegener's co-director, describes the technical orchestration of this sequence:

> Technicians, installed in a kind of underground passage, sent smoke and blazing matter up through the slits. They wore gas masks and pushed small carts along a track to feed the smoke and flames. At the same time, spotlights were titled down onto the smoke-flames, [giving] the impression that they were themselves incandescent.[94]

Though Boese is less specific in his account than Seeber, what we encounter here is a moment in which Wegener's microscopic chemical reactions are scaled up to become atmospheric, suffusing the set with a dense and mobile play of light and shadow.

The mention of gasmasks, however, also prompts us to consider the very real dangers that occasionally accompanied the production of atmospheric effects. Of course, a certain degree of discomfort had always accompanied film production, and in many cases one detects a certain note of professional pride in the enumeration of hardships, such as Max Mack's insistence that the "hottest temperatures in Germany are found in the summer film atelier," or Robert Herlth and Walter Röhrig's description of "simmering knee-deep in swirling dust" on the set of *Faust*.[95]

---

[94] Carl Boese quoted in Eisner, *The Haunted Screen*, 70.
[95] Mack, 94; Robert Herlth and Walter Röhrig, "Der Dämon im Glashaus," *Ufa-Magazin* 9 (15-21 Oct. 1926): np

Nonetheless, the electrical equipment and chemical substances employed in conjuring up cinematic weather could have severe consequences. For instance, the go-to substance for artificial snowstorms, a mixture whose base was naphthalene salt, was highly corrosive. As Erwin Wolfgang Nack put it, writing for the leftist magazine *Film und Volk*, this salt was "nice to look at, beautiful in the film, just not very pleasant for the throat, eyes and lungs […]. It burns, stings, and eats at one, in one, like hellfire, like a hundred thousand needles."[96] While Nack here undoubtedly indulges in some exaggeration, the difficulty of working in such conditions should not be shrugged off. Camilla Horn, who in her role as Gretchen was subjected to a day's shooting in such conditions, returned to set the next day with red marks across her face, which Hoffmann admitted were the result of the "biting salt storm, which was far worse than an actual snowstorm."[97]

The various substances used to thicken the air could also prove detrimental to the health of cast and crew. Although the ammonia-hydrochloric acid mixture that Seeber mentioned was regarded as essentially harmless, other recipes more problematic, leading Seeber to write that it would be a "special pyrotechnic achievement" to develop a "really usable and in no way harmful substance that allows any amount of smoke to be developed quickly and safely."[98] Nor was smoke the only detrimental substance released into the air; soot particles, thrown into the air by airplane engines, a technique frequently used in *Faust*, could easily be inhaled within the enclosed space of the studio, as could the dusts released into the air to assist the camera in capturing beams of light.[99] Just how dense the studio interiors could become is evident in one

[96] Nack, 8.
[97] Hoffmann, 48.
[98] Seeber, 263.
[99] Carl Boese, quoted in Eisner, 70. Boese mentions grinding up mica into a powder and dispersing it in the air to make rays of light stand out more starkly in the shots of the rabbi's study.

Figure 2.16: Murnau (in white lab coat), Carl Hoffmann (behind the camera), and other crew members on the smoke-drenched set of *Faust*. Filmmuseum Berlin - Deutsche Kinemathek.

production photograph from *Faust*, which shows Murnau and Hoffmann at the camera in an environment so thick with smoke that the figures of the three crew members standing in the mid-ground begin to lose their distinctness, dissolving into the dusty air (Figure 2.16).

Ufa, of course, was keen to avoid such workplace accidents, and to this end employed three standing firemen (and several apprentices), equipped with "every necessary device for the resuscitation in case of smoke inhalation [*bei Rauchvergiftungen*]."[100] Production photographs also reveal some of the protective equipment used by cast and crew when cameras were not

[100] Alex Kossowsky, "Das Filmgelände der Decla-Bioscop," *Film-Kurier* 227 (25 Sept. 1924): np.

Figure 2.17: Production photograph from the set of *Faust*, showing the film technicians clad in gasmasks while arranging fiberglass clouds on a model landscape. Cinémathèque française, Paris.

rolling.[101] In another photograph from the set of *Faust*, we encounter four crew members hunched over the model for the film's famous 'flight around the earth' sequence, which they are in the process of dressing with fiberglass clouds (Fig. 2.17). Unlike the similar image reproduced in *Tempo* (Fig. 2.12), this photograph, which to my knowledge was never published, shows the faces of the crew members obscured by gasmasks, presumably to guard against the inhalation of fiberglass particles. The presence of these gasmasks, which, alongside airplane engines and electrical generators, represented another instance of military technology incorporated into the

[101] The dark glasses worn between takes are the most well-known instance of such protective equipment. These were worn principally to protect the eyes of actors from the ultraviolet light of the studio's Jupiter lamps, prolonged exposure to which could cause conjunctivitis. See Müller, 19.

film studio, lends the photograph an ominous tone. If the former casts the film studio as a "cloud factory" [*Wolkenfabrik*], in which one built not only castles in the sky, but also the skies themselves, the latter suggests that even the power to build a world from scratch guarantees no immunity.

This photograph must have seemed even more ominous given the plentiful representations of gasmasks circulating in print during the mid 1920s, and this context lends a certain historical valence to comments such as Eisner's reflection that "Stimmung sometimes inclines, without the least transition, towards terror," or Balázs's discussion of the cinema's power to reveal a "landscape both alive and lethal."[102] Perhaps in an effort to avoid the implications of such statements that Ufa's publicity department, or the editors of *Tempo*, preferred the other photograph in its stead. For the sight of the gasmask in the studio—recruited precisely into the production of artificial clouds—underscores perhaps a bit too clearly the connection between Stimmung and environmental precarity, linking the film not only to its circumstances of production, but also to the larger situation of interwar Europe, where the prospect future gas attacks represented only the most sensational threat to a breathable milieu already eroded by the environmental costs of modernity itself.

This sense of environmental precarity is, moreover, echoed in the diegesis of Murnau's film. Mephistopheles's first action upon descending to the earth is to release a plague into the small medieval city in which Faust lives. The demon first materializes as a dark, looming shape, from whose shadow the plague—visualized in the form of a thick, dark smoke—seeps outwards to envelop the model town below (Figure 2.18). The deliberateness with which this atmospheric density is associated with demonic threat becomes even clearer when consulting the film's

[102] Eisner, *The Haunted Screen*, 204; Balázs, 54.

Figure 2.18: Mephisto releases his "poison breath," in actual fact, a large quantity of soot set in motion by large ventilators, over the city. Stills from *Faust* (Dir. F.W. Murnau 1926).

scenario, which, in addition to an annotation in Murnau's hand which describes Mephistopheles as "cloud-like" (*wolkenhafter*), notes in reference to this scene that the viewer should intuit the aspect of Mephistopheles in the "accumulation of clouds in an uncanny, contourless shape."[103] The fact that the demon's "poison breath" consisted of soot only further attests to the extent to which cinematic atmospheres were entangled not only the threat of poison gas, but also the quotidian realities of urban life.[104]

[103] Annotated screenplay entitled "Faust: eine Bilddichtung," 1925, Murnau 01-B1, Fonds Friedrich Wilhelm Murnau, Cinematheque française, Paris, France.
[104] The phrase "poisonous breath" comes from another of Murnau's annotations on the script. The use of soot to create this "breath of plague" is discussed by Robert Herlth in "With Murnau on the Set," 69.

The most fantastic smoke production technique, however, is described in a production report authored by Robert Chessex, who visited the set of *Faust* as a correspondent for the French film magazine, *Cinéa-Ciné*. In this text, Chessex relates how Murnau and his team generated the black smoke, which is perhaps used to its greatest effect in the short, seconds-long of the moon through the branches of an artificial tree. This shot occurs during the scene in which Faust conjures the demon Mephistopheles at a deserted crossroad in the middle of a landscape wrapped in gently drifting white mist. After the alchemist has drawn a circle on the ground and ritualistically saluted the four cardinal directions, beginning his summons, a cut is made to a short shot of the moon (in actual fact, a spot-lit aluminum disk). Suddenly, the white mist that pervades the shot is pushed aside by a vigorous eruption of thick black smoke, which casts its shadow over the glowing moon, temporarily obscuring it from sight (Figs. 2.19). Chessex's report on how this effect was achieved is nothing short of astounding:

> Regarding the production of large clouds of black smoke (which were used frequently in *Faust*), reels of undeveloped film were used […]. The reels, between 25 and 200 meters in length, were fixed to poles and lit with a soldering iron. When the film was completely inflamed, it was then submerged into water until it stopped emitting flames. Then it was taken out and continued consuming itself without any apparent flames, emitting instead thick spirals of yellowish and suffocating flame. And while the film slowly consumed itself, the smoke little by little blackened.[105]

The resultant battle of chiaroscuro gives visual expression to Murnau's description of Mephistopheles as a cloud-like presence, firmly associating the demon with the unnatural darkness of the blackened sky. More importantly, however, it evinces the sheer technical audacity of Murnau's film crew when it comes to producing artificial clouds. What we see in this short glimpse of the moon blotted out by malignant smoke is nothing less than an alchemical tour-de-force, in which a "spiritus silvestris" (a'wild' or 'incoercible spirit'), as the gas released

[105] Robert Chessex, "Junto a F.W. Murnau en los estudios de la Ufa," translated and reprinted in Luciano Berriatúa, *Los Proverbios chinos de F.W. Murnau* (Madrid: Filmoteca Española, 1990), 334.

Figure 2.19: White smoke overcome by black smoke during the conjuring of Mephistopheles. Film stills from *Faust* (Dir. F.W. Murnau, 1926).

by chemical reactions was known to seventeenth-century scientists, is summoned forth by human hands.[106] More than anything, it reminds us that there is something profoundly Faustian about the business of designing atmospheres and artificial clouds, an extravagance in which creation and destruction become difficult to distinguish. One might say that the whole enterprise speaks to a

[106] Connor, 16.

specifically modern species of megalomania, whether undertaken at the scale of a test-tube, film set, or that of the planet itself.

This, certainly, was the position taken by Kracauer after visiting the set of *Faust*. His account of the plans for the famous flight sequence can barely contain his apprehension at the sheer competency with which the Murnau's team managed to engineer the most ephemeral phenomena of nature:

> In a hall previously employed by pirates for their life of thievery, the planet Earth now expands *en miniature*. Faust will fly through the air from one backdrop to another. A wooden rollercoaster that curves down to the valley describes his aerial itinerary. […] Fog made of water vapour produced by steam engines envelops the range of appropriately sculpted mountain peaks from which Faust emerges. For the horrible crash of the foaming deluge, some water is sprayed through a side canyon. The wild urges subside when the wheat covering the fields and meadows beneath the jagged, pine-covered summits rustles in the wind of a propeller. Cloud upon cloud wafts eastward, masses of spun glass in dense succession. Upon Faust's landing, huts surrounded by greenery will most likely shimmer in the blazing, high-wattage glow of the evening sun.[107]

Kracauer's dramatic tone is suggestive of the writer's mixture of astonishment and discomfort upon witnessing the natural world so thoroughly supplanted. Such misgivings are readily understandable given the long-standing ambitions towards a technological instrumentalization of the air itself, already partially realized in the chemical violence of the First World War. However, a counter claim can also be made in the film's defense. After all, like no other film of the Weimar period, *Faust* raises the question of what it means to call up an 'incoercible spirit.' As a *film*, it is positively anxious about the cost of such dangerous commerce. As a *production*, however, it also recognizes that it is only through such resources that this dangerous commerce can be offered up to thought.

[107] Kracauer, 284.

Moreover, as we have seen, the ominous artificial weather of Murnau's *Faust* was far from the inauguration of the dream of total atmospheric design. Rather, it was produced in the wake of nearly a century of research, speculation, and experiments in the production of artificial clouds ranging from the noxious to benign. This history reveals that artificiality of *Faust*'s smoke and clouds was merely consonant to that of the air itself, which by the mid-1920s had (at least in urban centers such as Berlin, the center of the German film industry), been thoroughly altered by industrial modernity. Of course, this was nothing new. Since the end of the nineteenth century, artists and intellectuals had voiced concerns about modernity's darkening skies. That voiced in John Ruskin's 1884 lecture, "The Storm Cloud of the Nineteenth Century," is only the most famous, underlining—with a token reference to *Faust*—the extent to which the activities of modern industry had already initiated palpable climactic change.[108] Such a profound entanglement of the technological and atmospheric calls for a redefinition of the natural and the artificial, similar to that articulated by Benjamin in his planetarium essay. Following Benjamin, we might say that it is only by recognizing the technicity of atmosphere that we can begin to forge a new relationship with it. Though I doubt Murnau's ambitions were so grand, his film nonetheless dramatically intimates the risks associated with 'getting hold of shadows' and attempting to bend them to one's will. Above all, it is a film that insists upon the fundamental impudence of 'incoercible spirits,' who may not be as amenable to human will as they initially appear.

[108] John Ruskin, "The Storm Cloud of the Nineteenth-Century," in *John Ruskin: Selected Writings*, ed. Dinah Birch (Oxford: Oxford University Press, 2004): 267-278.

CHAPTER THREE

THE AIR OF OBJECTIVITY: MODERNIST PURITY RECONSIDERED

"It was fresh—that was all," wrote Thomas Mann in *The Magic Mountain* as the novel's protagonist, Hans Castorp, takes his first gulp of the Berghof Sanatorium's renowned mountain air. "It lacked odor, content, moisture; it went easily into the lungs and said nothing to the soul."[1] As rarefied as Mann's deadpan prose, the air that Hans Castorp all but tastes is one that has been purified of all foreign elements. Mann performs this purification with a remarkable economy, but this should not deceive as to the enormity of the operation. In the space of just two short sentences, Mann has dispelled not only the thick atmosphere of the lowland city, filled with mist and fog, organic odors, and the chemical residues of industry, but also any spiritual dimension, treated here as roughly equivalent to any other form of contamination.[2] What remains is little more than an abstraction: an air so lacking in qualities that it might entirely escape notice, if its very purity did not render it conspicuous.

As we have seen, however, by the Mann's two-volume novel appeared in 1924, the air was far from inconspicuous. If research in fluid dynamics, chemistry, and meteorology had, over the course of the preceding centuries, transformed the air into an object of study, by the first decades of the twentieth this new sensitivity to atmospheric conditions had seeped into culture at large, appearing in popular guidebooks, medical texts, cabaret songs, and even the language of art criticism. Of course, the atmospheric had long occupied a privileged position in the German

[1] Thomas Mann, *The Magic Mountain*, trans. John E. Woods (New York: Vintage, 1996), 8-9. The original German reads: "Und Hans Castorp nahm neugierig einen tiefen, probenden Atemzug von der fremden Luft. Sie war frisch—und nichts weiter. Sie entbehrte des Duftes, des Inhaltes, der Feuchtigkeit, sie ging leicht ein und sagte der Seele nichts." The use of the verb *entbehren* in the original places an additional stress on the idea of purification as a process rather than purity as quality, the prefix *ent-* signifying removal or negation.

[2] It is perhaps here that Mann is at his most radical, refusing the entire tradition of German landscape aesthetics by disassociating the spiritual from the physical atmosphere, *Stimmung* from *Atmosphäre*.

aesthetic tradition. Yet invocations of atmosphere from the turn of the century can be distinguished in their growing emphasis on the air as a physical substance with a physiological impact. Early evidence of this new inflection can be found in the work of no less a figure than Heinrich Wölfflin, who went so far as to identify the rhythm of respiration as the primary medium of aesthetic experience in his 1886 dissertation.[3] Even more curious, however, is the observation that the young art historian offered as the proof for his claim: "We may remain impassive when viewing the physical pain of another person, but we are horrified to see someone suffocating."[4]

The influence of empathy theory is palpable in Wölfflin's turn to the body, yet even in this context there is something strange about his stress on the rhythms of breath and the horror of its lack.[5] For by the mid-1880s, suffocation was less a hypothetical than a looming threat. In the wake of the rapid urban and industrial growth that followed its unification in 1871, access to fresh air became increasingly precarious in cities across Germany.[6] Concerns about air quality even permeated cultural criticism; the Werkbund founder Hermann Muthesius and Lebensreform author Heinrich Pudor both launched critiques of the metropolis that likened its atmosphere to

[3] Heinrich Wölfflin, "Prolegomena to a Psychology of Architecture," in *Empathy, Form, and Space: Problems in German Aesthetics, 1873-1893*, trans. Henry Francis Mallgrave and Eleftherios Ikonomou (Santa Monica: Getty Center for the History of Art and the Humanities, 1993), 156. "For the *internal* organs, above all, are sympathetically affected, and according to my observations it is *respiration* that is most susceptible to change. The rhythm of breathing that we perceive in others is what is most easily transferred to us. […] Breathing is the most direct organ of expression." To my knowledge, Wölfflin's dissertation is the only contribution to this debate involving the internal rhythms of breath.

[4] Ibid.

[5] Empathy theory was generally more concerned with the relationship of the haptic and the optic, the hand and the eye, and in the case of Schmarsow, with proprioception. To my knowledge, Wölfflin's dissertation is the only contribution to this debate involving the internal rhythms of breath.

[6] Population and industrial centers overlapped significantly, especially in northern Germany and the North-Rhine Westphalia regions, with which this chapter will be specifically concerned.

that of a greenhouse, a metaphor which carried connotations of both the artificial and insalubrious.[7]

It was in this context that the writer Wilhelm Bölsche, a prominent popularizer of literary naturalism in the German-speaking world, would diagnose a "completely new and utterly insatiable hunger […] for a patch of pure blue sky without telegraph wires and chimney soot."[8] As a founding member of the Deutsche Gartenstadt-Gesellschaft, Bölsche was hardly a disinterested observer, yet his words indicate the extent to which this desire for clear skies and fresh air was perceived from the very beginning as historical. Faced with the increasing contamination of the urban environment, fresh air became nothing less than an object of longing. Over the next decades, this longing for fresh air would develop into a powerful motor for architectural modernism. The rising popularity of mountain sanatoria, the establishment of garden-city satellites, and creation of air baths for the working classes would continue to serve as key inspirations for the New Building (*Neues Bauen*) of the twenties and thirties. The words 'light, air, and sun' (*Licht, Luft und Sonne*) thus became a potent rallying cry, through which interwar modernists distinguished their project from the perceived failures of nineteenth-century modernity, which culminated in the human and environmental catastrophe of the Great War.[9]

This atmospheric rhetoric, however, was by no means limited to architectural discourse. The contrast between the dust and smoke of the nineteenth century and the fresh air of a

---

[7] Hermann Muthesius, "Wo Stehen Wir," *Jahresbericht des Deutschen Werkbundes* (1912): 14; Heinrich Pudor, *Nackende Menschen: Jauchzen der Zukfunft* (Dresden: Verlag der Dresdner Wochenblätter, 1893), 40-41.

[8] Wilhelm Bölsche, *Hinter der Weltstadt: Friedrichshagener Gedanken zur ästhetischen Kultur* (Leipzig: E. Diedrichs, 1901). "Ein ganz neuer und zwar schlechterdings unstillbarer Heizhunger […] nach einem unverfälschten Riß Himmelsblau ohne Telegraphendrähte und Schlotruß." One might also think here of Ruskin's "Storm-Cloud of the Nineteenth Century."

[9] The human and environmental catastrophe of the Great War provided the perfect symbolic marker for this perceived distinction. Peter Sloterdijk has even suggested that we might consider the first gas attacks of the First World War as the beginning of modernity, which he defines as an era of "atmospheric explication." See Peter Sloterdijk, *Terror from the Air*, trans. Amy Patton and Steve Corcoran (Los Angeles: Semiotext(e), 2009).

projected future also appears in contemporaneous debates on artistic practices as diverse as painting, graphic design, and photography, indicating the extent to which the problems of environment had become problems of aesthetics. In the domain of photography, with which this chapter is ultimately concerned, this atmospheric shorthand became particularly useful to a new generation of photographers and critics, who sought to advance an aesthetic of sharpness in opposition to the haze of pictorial photography (known as *Kunstphotographie* in the German-speaking world). As discussed in my first chapter, the depiction of atmosphere was crucial to the artistic ambitions of Central European pictorial photographers, prompting a host of procedures for obtaining atmospheric effects on the surface of the photographic print, from the subtle tonality of the platinum process to the cultivated blur of gum-bichromate.[10] Given the importance of atmospheric effects to pictorialism, it is hardly surprising that advocates of what eventually became known as New Objectivity (*Neue Sachlichkeit*) photography drew heavily on atmospheric metaphors in their rejection of pictorialism, calling on photographers to 'disinfect' the hazy atmosphere favoured by their predecessors.

Amongst historians of photography and media, this atmospheric rhetoric has traditionally been accounted for as a metaphor for medium specificity. In doing so, historians have followed the terms laid down by the American critic Sadakichi Hartmann, whose 1904 "Plea for Straight Photography" described the shift from pictorialism to straight photography as a rejection of

[10] Chapter 1 goes into greater detail on the distinction between these terms. *Stimmung*, as previously mentioned, was an important concept in post-Kantian German aesthetics, which, while the subject of frequent redefinitions, encompassed the English notions of atmosphere, mood, and affective tonality, expressing a bi-directional relationship between the beholding subject and a work of art or nature (in this respect, it is important that the term derived from the musical notion of "attunement," which allowed it, as Leo Steinberg has convincingly demonstrated, to also express a sense of "harmony." *Atmosphäre*, by contrast, derived from the Greek and correspondingly carried with it a certain international resonance (corresponding more easily to the French *atmosphere*, for example). The crucial distinction, however, is that the term entered the German language in the eighteenth century through the language of scientific research, and correspondingly retained a particularly scientific and physical connotation. It does not, notably, appear in the Grimms' Deutsches Wörterbuch, whose first volume, running from the letter A to the word Biermolke, was published in 1854.

painterly artifice in favour of a lens-based aesthetic more proper to photography.[11] Although questions of medium were indeed important to the interwar German debates on photography, such a narrow interpretation does little to account for the manifest promiscuity of atmospheric metaphors across artistic media and disciplines. Neither does it account for the work of the photographer, the expertise and technical procedures required to achieve the radical clarity of the New Objectivity print. Nor, indeed, does it account for the relationship of New Objectivity aesthetics to the physical environment in which photographers lived and worked, which, by the interwar period, had come to resemble nothing so much as a pictorialist print.

In order to offer a fuller account of the atmospheric—or better still, anti-atmospheric—discourse of the interwar photographers and critics, this chapter proposes that these atmospheric metaphors might better be regarded as a point at which the new photography intersected with discourses of built environment, health, and the environmental realities of industrial modernity. This chapter thus begins with a basic question. What would it mean it take seriously—and to a certain extent literally—the frequent invocations of atmosphere that animated interwar photography's attempts to distance itself from its immediate predecessors? To approach these atmospheric metaphors not as mere rhetorical flourishes, but as historical symptoms, expressing a deep-seated anxiety in the face of a rapidly changing environment? What might it mean, finally, to consider the sharpness of Neue Sachlichkeit photography as an aesthetic strategy calibrated to bring clarity to modernity's most problematic sites? To reframe modernist purity itself as a response to the increasingly adulterated air of modernity?

[11] Sadakichi Hartmann, "A Plea for Straight Photography," in *Photography: Essays and Images*, ed. Beaumont Newhall (New York: MoMA, 1980), 185-188. Hartmann was particularly critical of the visible brushstrokes of certain gum-prints, which he declared "unnatural to photography."

In posing these questions, this chapter aims to offer an account of interwar photography that is at once permeable to the environment from which it emerged and attentive to the way in which photography, in turn, acted upon this environment. Indeed, the larger claim of this chapter is that the clear contours, smooth planes, and fetishized sharpness of New Objectivity photography played a critical role in advancing a vision of the world of fresh air that interwar modernism aspired to create. For already by the late 1920s, fresh air was quickly becoming something that could no longer simply be found *out there*, in the natural world. Rather, like Mann's mountain air, it was increasingly recognized as the product of a process of negation, in which a purified visual aesthetics proved as—if not *more*—critical than systems of ventilation. Indeed, in the absence of any meaningful, large scale measures of environmental protection and amelioration, the photography of New Objectivity was burdened with a particularly heavy task: to bring forth clarity from a world that had none.

Clearing the Air (One Picture at a Time)

By the end of the 1920s, references to the musty bourgeois drawing room, the sultry air of the greenhouse, and the heavy fog of the metropolis pervaded the writings of photographers and critics across Central Europe. Perhaps the most prominent instance of this rhetoric can be found in Walter Benjamin's "Little History of Photography" (1931), an essay whose very first words announce fog as a pivotal theme in the discussion that will follow. This language is picked up again in a well-known passage about the French photographer Eugène Atget, which occurs towards the end of the essay. Atget had recently garnered attention in Germany through a 1930 volume by Camille Recht, which positioned the French photographer as the precursor of a new realism in photography. Picking up on this theme, Benjamin's article proffered Atget's work as

nothing less than a model for photographers of present. After critiquing the "fashionable twilight" of fin-de-siècle photography, Benjamin lauded Atget's work in the following terms:

> [Atget] was the first to disinfect the stifling atmosphere generated by conventional portrait photography in the age of decline. He cleanses this atmosphere—indeed, he dispels it altogether: he initiates the emancipation of the object from the aura, which is the most signal achievement of the latest school of photography.[12]

Commentary on this passage has largely focused on the notion of the aura. Most recently, Antonio Somaini has convincingly argued that, at this stage of Benjamin's thinking, the aura connoted a historically-contingent, diaphanous medium conditioning perception—one might say, the atmospheric medium of perception itself.[13] My interest, however, lies less in the puzzle of the aura than it does in the periodization of atmospheric conditions at work in this text. For in this passage, and indeed throughout the essay, we can observe the construction of a metonymic relationship linking the last decades of the long nineteenth century—the 'age of decline,' as Benjamin would have it—to a certain atmospheric density. This metonymic relationship in fact pervades Benjamin's oeuvre; writing to his friend Werner Kraft from Paris on October 28, 1935, for instance, Benjamin would describe his own theoretical project as an attempt to "aim [his] telescope through the blood-fog […] of the nineteenth century."[14] Fog thus becomes a figure of history, which the photographer—as much as the theorist—is called upon to dispel, making way for the clarity of a new era.

---

[12] Walter Benjamin, "Little History of Photography," *Selected Writings, Volume 2, Part 2: 1931-1934*, eds. Michael Jennings, Howard Eiland, and Gary Smith (Cambridge, Mass.: Belknap Press, 1999), 518. German original can be consulted in *Gesammelte Schriften II*, ed. Rolf Tiedemann and Hermann Schweppenhäuser (Frankfurt am Main: Suhrkamp, 1991), 378.

[13] Antonio Somaini, "Walter Benjamin's Media Theory: The Medium and the Apparat," *Grey Room* 62 (Winter 2016): 18.

[14] Walter Benjamin, Letter to Werner Kraft, October 28, 1935. Reproduced in Walter Benjamin, *Gesammelte Schriften V*, ed. Rolf Tiedemann (Frankfurt am Main: Suhrkamp, 1991), 1151. "Was mich betrifft, so bemühe ich mich, mein Teleskop durch den Blutnebel hindurch auf eine Luftspiegelung des neunzehnten Jahrhunderts zu richten."

Of course, by the time Benjamin's essay appeared in 1931, this trope was already a well-established one in the writings of photographers and critics. The pages of trade journals, popular magazines, and photobooks resounded with quips about the "moribund" atmosphere of pictorialism, which was presented as not only antiquated, but also degenerate.[15] In his introduction to the photobook *Foto-Auge* (1929), which served as an unofficial companion to the Stuttgart *Film und Foto* exhibition, the art historian Franz Roh scoffed at the "softening impressionist minds" of an older generation of photographers, who "cloaked everything in dusk."[16] Although Roh's critique hinges on a reference to painting, it is telling that Roh does not invoke the medium as such, but rather a style of painting specifically associated with the depiction of atmospheric effects. In this sense, Roh's remark is typical of photo discourse in the late 1920s. While comparisons of photographs to Constructivist or New Objectivity canvases might be received as terms of praise, the mention of Impressionism generally carried with it a sense of opprobrium, suggesting that what was at issue was less a question of medium than a question of style—and the vision of the world that it communicated.

Indeed, for many critics of the late 1920s, Impressionism embodied nothing less than an outmoded worldview, a pictorial decadence premised on the dissolution of the object into an ephemeral play of light, shadow, and mood. By contrast, the new photography was called upon to wrest the object from its atmospheric entanglements.[17] As the art historian Wolfgang Born would assert in another article from 1929, "*Architektur* [structure], no longer *Stimmung* [mood,

---

[15] József Pécsi, quoted in Matthew Witkovsky, *Foto: Modernity in Central Europe, 1918-1945* (New York: Thames and Hudson, 2007). From a letter to Renger-Patzsch praising his 1928 photobook *Die Welt ist schön*.
[16] Franz Roh, "Mechanismus und Ausdruck: Wesen und Wert der Fotografie," *Foto-Auge* (Stuttgart: Akademischer Verlag Dr. Fritz Wedekind & Co., 1929), 6.

[17] Wolfgang Born writes: "The task is to seize hold of the object, to draw it out of its labile relationship with other objects [Denn es gilt, das Objekt zu fassen, es herauszugreifen aus seiner labilen Verbundenheit mit anderen Objekten]." Wolfgang Born, "Die Photographische Weltanschauung," in *Theorie der Fotographie II: 1912-1945*, ed. Wolfgang Kemp (Munich: Schirmer/Mosel, 1999), 140.

atmosphere], is the governing element of the picture. The crystalline, severe, logical, balanced, transparent: these are the qualities that we demand from the work of art."[18] Here it is not the painterly per se, but *Stimmung* that becomes an object of censure. Defined in opposition to the architectural, the atmospheric emerges as a substance that must be purged from the surface of the picture in order to perceive the object as an autonomous entity beholden to neither the sentiment of the photographer nor the vagaries of the environment.

The censure of *Stimmung* was also a theme in the writings of photographers. In a 1925 article, polemically titled "Heretical Thoughts on Artistic Photography," the photographer Albert Renger-Patzsch insisted:

> The amateur photographer must not indulge in the *Stimmung* of the landscape when he works: he must negate the ozone, which makes his step light, he must see no colours, he must not let himself be influenced by the spring wind, he must see only with one eye, for the camera with one lens has no plastic insight.[19]

Here, we find Renger-Patzsch encouraging the photographer to align his perception with that of the camera. What is notable, however, is that Renger-Patzsch suggests that one does so precisely by negating the influence of the surrounding atmosphere. And this in great detail. Although the invocation of *Stimmung* partakes in a long-standing aesthetic vocabulary, this passage also bespeaks a highly concrete, one might even say scientific, understanding of atmospheric phenomena. Not only a vague, sentimental mood, but also the wind—even the ozone particles in the air—must be dispelled from the photograph.

---

[18] Ibid. "Die Architektur, nicht mehr die Stimmung, ist das tragende Element des Bildes. Das Kristallische, Strenge, Logische, Ausgewogene, Durchsichtige sind die Eigenschaften, die wir von einem Kunstwerk verlangen."
[19] Albert Renger-Patzsch, "Ketzergedanken über künstlerische Photographie," in *Die Freude am Gegenstand: Gesammelte Aufsätze zur Photographie*, eds. Bernd Stiegler and Ann and Jürgen Wilde (Munich: Wilhelm Fink Verlag, 2010), 46. "Deshalb darf der ernste Amateurphotograph sich nicht der Stimmung hingeben, wenn er arbeitet, sondern er muß das Ozon negieren, das ihn leicht macht, er darf keine Farben sehen, er darf sich nicht vom Frühlingswind schmeicheln lassen, er darf nur mit einem Auge sehen, weil der Apparat mit einem Objektiv keine plastischen Vostellung gibt."

This denunciation of the atmospheric, however, was not unique to the context of photography. Rather, it drew directly on early twentieth-century critiques of the metropolis and its impact on the human subject. For this reason, closer attention to the cultural discourse of the Wilhelmine period is illuminating, not the least because it enables us to appreciate just how much was at stake in the interwar rejection of atmospheric depiction. As we shall see, Impressionism played a key role in these debates; however, it is important to note that the German reception of Impressionism during the 1890s and 1900s significantly expanded the term's frame of reference. No longer simply a style of painting, the term was used to refer to literature, music, philosophy, and indeed, a new mode of subjectivity specifically associated with the experience of modern urban life. "Impressionism as art and life is completely at home in the metropolis," wrote the art historian Richard Hamann in *Der Impressionismus in Leben und Kunst* (1907), drawing both a morphological and causal relationship between impressionist aesthetics and the kaleidoscopic visual experience of the metropolis.[20] Anticipating the notion of Impressionism as worldview that one finds in the work of interwar critics like Born, Hamann's monograph argued for the spread of Impressionism across a wide range of cultural phenomena, including everything from the paintings of Max Liebermann to the music of Richard Strauss and Wagner, from the poetry of Hugo von Hofmannstahl to the lyrical prose of Friedrich Nietzsche and the ecologist Ernst Haeckel. Impressionism, it would seem, had pervaded every facet of artistic and intellectual production.

The expansiveness of the category, however, should not be mistaken for enthusiasm. Like many of his contemporaries, Hamann regarded the spread of Impressionism with a high degree of anxiety, as though the merest presence of an outline were all that stood in the way of the

[20] Richard Hamann, *Der Impressionismus in Leben und Kunst* (Cologne: M. Dumont-Schaubergschen Buchhandlung, 1907), 216.

complete collapse of culture. In his seminal study of the Deutscher Werkbund, the architectural historian Frederic J. Schwartz suggests that a language of "contagion" pervaded the Wilhelmine discourse on Impressionism.[21] Just as the impressionist canvas dissolved the object into atmosphere, Wilhelmine critics cast Impressionism as a kind of airborne pathogen, poised to contaminate and corrupt every aspect of cultural life. In a famous address delivered to the Deutscher Werkbund in 1911, Hermann Muthesius warned his colleagues against the possibility that architecture and the applied arts might soon become "infected" by Impressionism, insisting that "the thought of an Impressionist architecture is simply horrifying—let us not even think it through!"[22] For critics like Hamann and Muthesius, Impressionism represented the dissolution of all that was permanent and stable under the aegis of modernity—its tendency to "dissolve everything into a prickling, formless flickering" threatened not only the integrity of the object, but also the integrity of German cultural institutions.[23] Or, Muthesius himself flatly intoned: "Formlessness is synonymous with *Unkultur*."[24]

Statements such as these are emblematic of what Michael Cowan has diagnosed as a turn-of-the-century pathologization of Impressionism.[25] As Cowan's research demonstrates, this pathologization drew extensively on the work of the historian Karl Lamprecht and physician Willy Hellpach, both of whom explicitly linked impressionist aesthetics to the emergence of nervous disorders.[26] In 1902, Hellpach would describe the disposition of the nervous person as

---

[21] Frederic J. Schwartz, *The Werkbund: Design Theory and Mass Culture Before the First World War* (New Haven: Yale University Press, 1996), 92.
[22] Muthesius, 24. "Der Gedank an eine impressionistische Architektur aber wäre einfach furchtbar. Denken wir ihn nicht aus!"
[23] Hamann, 40. As Frederic Schwartz points out, the most fundamental of these institutions was that of the bourgeois subject itself. The panic over the collapse of cultural institutions also frequently gave rise to outbursts of Francophobia and anti-Semitism, charges of which Hamann's text is by no means innocent.
[24] Muthesius, 19. "Formlosigkeit ist gleichbeteutend mit Unkultur."
[25] Michael Cowan, *The Cult of Will: Nervousness and German Modernity* (Philadelphia: Penn State University Press, 2008).
[26] Willy Hellpach, *Nervosität und Kultur* (Berlin: J. Räde, 1902), 134.

one in which "all clear and certain thoughts become clouded; concepts and principles crumble, as it were, exposed as they are to thousands of disruptions and disturbances; the self, the personality, finds itself at the mercy of unpredictable influences."[27] From this passage, it is not difficult to understand why this psychological state was quickly linked to impressionist painting. The pictorial dissolution of form, it would seem, offered the perfect analogue to the nervous subject's inability to perform functions of higher synthesis.[28] Indeed, Lamprecht would even go so far as to speak of a "neurological Impressionism" afflicting the modern subject.[29]

The anxiety surrounding Impressionism, however, also concerned the breakdown of physical boundaries. This stress on the physical can be observed in the Viennese art historian Alois Riegl's *Late Roman Art Industry* (1901), which, as Ingrid Christian has argued, was haunted by the spectre of Impressionism.[30] The footnotes of this monograph, the second edition of which appeared to great acclaim in 1927, abounded with remarks contrasting the figure-ground relations of late Roman art to those of modern Impressionism. Tellingly, Riegl's footnotes also repeatedly link Impressionism to recent discoveries in the realm of physics, chemistry, and cellular biology. In one particular striking note, Riegl argues that the tree, which the ancient artist once understood as an organic unity, becomes, in the eyes of the modern artist, "a collective being consisting of thousands of independent organisms, that in its actions follows

[27] Hellpach, quoted in Cowan, 35.
[28] Hellpach's treatise ends with a lengthy section on cultural production that deals with impressionism in the visual arts, poetry, and music.
[29] Lamprecht, quoted in Cowan, 31.
[30] During this period, Impressionism had recently penetrated the Viennese artistic community and become extremely influential amongst painters of the Viennese Secession and Viennese pictorial photographers like Heinrich Kühn and Hugo Henneberg. As Ingrid Christian pointed out in her seminar, "Ecological Aesthetics," which first alerted me to these footnotes, Impressionism was also becoming a popular term in art historical discourse on the art of late antiquity. Riegl's monograph was written in large part as an attempt to refute the notion of "ancient Impressionism" proposed by Franz Wickhoff in relation to the Wiener Genesis.

not one underlying force, but thousands, which influence it in a thousand matters."[31] Hence the modern artist's desire to express the "collective character" of the natural world, which is elsewhere described as a "melding with the environment, a transition into atmosphere."[32] Although it is unclear whether Hellpach and Lambrecht were aware of Riegl's remarks on Impressionism or vice versa, common to their work is an understanding of Impressionism as the pictorial expression of an increasingly permeable relationship between object and environment, which is rendered in the work of Hellpach and Lamprecht as a relationship between the human body and the metropolitan environment.

Early twentieth-century criticism on Impressionism thus provided a space in which critics grappled with increasing vulnerability of bodies to external forces, including the atmosphere itself.[33] Indeed, simultaneous to the turn of the century debates on Impressionism were mounting concerns about the negative effects of the urban atmosphere on human health, and it is sometimes difficult to separate the social and economic irritants that concerned historians like Lamprecht from the physical irritants that preoccupied early twentieth-century physicians and social reformers. This was the era of the *Luftkur* (air cure), so aptly parodied by Mann, during which lengthy sojourns in the fresh mountain air were prescribed in an effort to combat tuberculosis, asthma, and other respiratory ailments.[34] Sanatoria and travel guides regularly

---

[31] Riegl, *Late Roman Art Industry*, trans. Rolk Winkes (Rome: Giorgio Bretschneider Editore, 1985), 227. Riegl's *Late Roman Art Industry* was first published in 1901, however it was not until it appeared in a second edition in 1927 that this book received a wide reception as a theoretical text. Concepts from the *Late Roman Art Industry* like the optic and the haptic were discussed in photography circles, and I would venture that Riegl's interest in the relationship of figure and space also resonated in these debates.

[32] Ibid., 227, 56.

[33] Hellpach himself would go on to write the first medical treatise devoted to the effects of weather and climate on the human psyche in 1911. Willy Hellpach, *Die Geophysischen Erscheinungen: Wetter, Klima und Landschaft in ihrem Einfluss auf das Seelenleben* (Leipzig: Wilhelm Engelmann, 1911). In his introduction, Hellpach specifically refers to the "strong susceptibility of the central nervous system to atmospheric conditions," casting his work in terms not only psychological, but also physiological (p. 7).

[34] The *Luftkur* was first proposed in the German doctor Hermann Brehmer's 1856 dissertation, *Die Gesetze und die Heilbarkeit der chronischen Tuberkulose der Lunge*, but experienced a burst in popularity following the its

published statistics on the levels of sunlight, humidity, and ozone in their environs in an effort to attract patients and tourists both, fostering an enduring fascination with the mountain air, which was reported to have even been bottled and sold.[35] Meanwhile, the 'bad air' of the city became a frequent leitmotif in the publications of the Lebensreform movement, which advocated a return to nature as an antidote to the perceived failures of urban and industrial modernity.[36] The right-wing Lebensreform polemicist Heinrich Pudor, for instance, delighted in comparing city-dwellers to the sickly flowers grown in the hot-house, which he contrasted with the strong linden trees of the mountains, nourished by thick roots, ample sun, and fresh air.[37]

This Lebensreform discourse was complemented by a growing body of scientific research on the problem of the *Rauchplage* (smoke-plague) afflicting German cities. Inspired by research across the channel on the London Fog, German scientists employed rain gauges, sun-autographs, Aitken dust counters, and Ringelmann charts to measure air pollution levels in urban centers across the nation.[38] As a result of these efforts, the smoke plague and its consequences for public health began to be understood in more concrete terms. Indeed, the first published account of the harmful effects of smoke on human health appeared as early as 1905. Drawing on a combination of statistical research and animal experiments, the author of this report—the physician Louis Ascher—insisted on a definite correlation between exposure to smoke and respiratory ailments.[39]

---

promotion by the Davos-based doctor Alexander Spengler in the 1860s, who published meteorological data in his writings.

[35] Alison Frank, "The Air Cure Town: Commodifying Mountain Air in Alpine Central Europe," *Central European History*, 45, no. 2 (June 2012): 199.

[36] For more on the Lebensreform movement, see Michael Hau, *The Cult of Health and Beauty in Germany: A Social History, 1890-1930* (Chicago: University of Chicago Press, 2003).

[37] Pudor, 40-41.

[38] For a more detailed account of scientific research on air pollution in Wilhelmine Germany, see Ulrike Gilhaus, *Schmerzenskinder der Industrie: Umweltverschmutzung, Umweltpolitik und sozialer Protest im Industirezeitalter in Westfalen, 1845-1914* (Paderborn: Ferdinand Schöningh, 1995), 123-187.

[39] Louis Ascher, *Der Einfluss des Rauches auf die Atmungsorgane* (Stuttgart: Ferdinand Enke, 1905). Ascher conducted research in the Ruhrgebiet, where he noted the high percentage of deaths due to lung problems amongst workers, and conducted experiments on rabbits exposed to various concentrations of smoke.

While debunking the popular belief that smoke particles contained pathogens, Ascher argued that, because smoke particles mechanically irritate the lungs, long-term exposure rendered humans both more susceptible to lung disease and less likely to recover.

Such research brought increasing precision to what was already a perceptual fact and would continue to be quoted well into the 1920s by medical professionals, societies for smoke abatement, and social reformers. However, regulating smoke emissions proved difficult, and despite modest improvements in smoke filtration, the problem of air pollution persisted well into the interwar period.[40] In a report summarizing the state of research on the issue from 1917, the state functionary Albert Reich put the matter in more idiomatic terms, describing the smoke plague as a "permanent nuisance," characterized by the obstruction of sunlight, the increased likelihood of fog formations, and the presence of a "thick, grey, standing cloud over the entirety of the city."[41] Interestingly for our purposes here, Reich discussed the smoke nuisance as a problem of both health and aesthetics:

> A glance at an industrial city from a short distance reveals that the smoke is also a nuisance from an aesthetic point of view. The city appears as though covered by a thick, almost impenetrable veil that obscures all the buildings, and from which only small corner emerges now and then, when aired by a gust of wind.[42]

Taken out of context, this passage could easily be mistaken for a description of one of Monet's London canvases, or, for that matter, a pictorialist print. Scientific reports such as Reich's thus

[40] Frank Uekötter, *Age of Smoke: Environmental Policy in Germany and the United States, 1880-1970* (Pittsburgh: Pittsburgh University Press, 2009). Uekötter cites the unwillingness of officials to implement and enforce widespread regulation as the reason for this lack of improvement, despite the growing number of civilian complaints and studies of the problem in technical journals. Quoting the words of Gustav Lang, a professor at the Technical College of Hannover, Uekötter relates, by the 1910s it was generally acknowledged that a solution to the problem of smoke was "urgently needed," but "opinions still diverge over the 'How' of this remedy." Uekötter, 66.
[41] Albert Reich, *Leitfaden für die Rauch- und Rußfrage* (Munich, Berlin: R. Oldenbourg, 1917), 101-103.
[42] Ibid., 11. "Daß der Rauch auch in ästhetischer Hinsicht eine arge Belästigung bedeutet, zeigt uns ein Blick auf eine Industriestadt schon aus geringer Ferne. Sie erscheint uns wie mit einem dichten, fast undurchdringlichen Schleier bedeck, der alle Gebäude verhüllt und von dem nur ab und zu mal durch einen Windstoß ein Eckchen gelüftet wird."

offer a potent reminder of the extent to which problems of aesthetics intersected with problems of environment. For this reason, historicizing the reaction against pictorialism requires taking into account not only art historical discourse, but the physical environment in which photographers and critics lived and breathed. Doing so allows us to recognize that, by the late 1920s, photography was only one of the many quarters from which calls to 'clear the air' sounded. In this respect, we might say that the atmospheric metaphors of interwar critics like Benjamin were themselves contaminated, informed by both the thick air of industrial modernity and an increasing awareness of the vulnerability of the body to its influences.

Indeed, the photographer Albert Renger-Patzsch himself explicitly referred to the unhealthy air of the city in an article about plant photography published by Hugo Meyer & Co., a Görlitz-based manufacturer of photographic equipment. "Insofar as we concern ourselves with nature," wrote Renger-Patzsch at the conclusion of his article, "we bring our whole organism, which has been enfeebled by the air of the metropolis, into vital contact with nature, and this alone would be reason enough to spend our leisure hours in such a manner."[43] Drawing on the logic of the Lebensreform movement, Renger-Patzsch here instils the act of photographing plants with a restorative dimension analogous to that of a country excursion. This analogy, however, becomes rather strange when considered alongside the images that illustrated the text, which feature greenhouse specimens staged against abstract backgrounds (Fig. 3.1). It is difficult to imagine encountering these plants while ambling through the country—the photographs' tight framing, sharp focus, and indeterminate backgrounds all conspire to isolate the plant from its

[43] Albert Renger-Patzsch, "Pflanzenaufnahmen (1926)," in *Die Freude am Gegenstand: Gesammelte Aufsätze zur Photographie*, eds. Bernd Stiegler and Ann and Jürgen Wilde (Wilhelm Fink Verlag, 2010), 67. "Indem wir un smit der Natur beschäftigen, bringen wir unsern ganzen, durch Großstadtluft entkräfteten Organismus mit der Natur in lebendige Berührung, und dies allein wäre Beweggrund genug, daß wir unsere Mußestunden auf diese Weise verwenden."

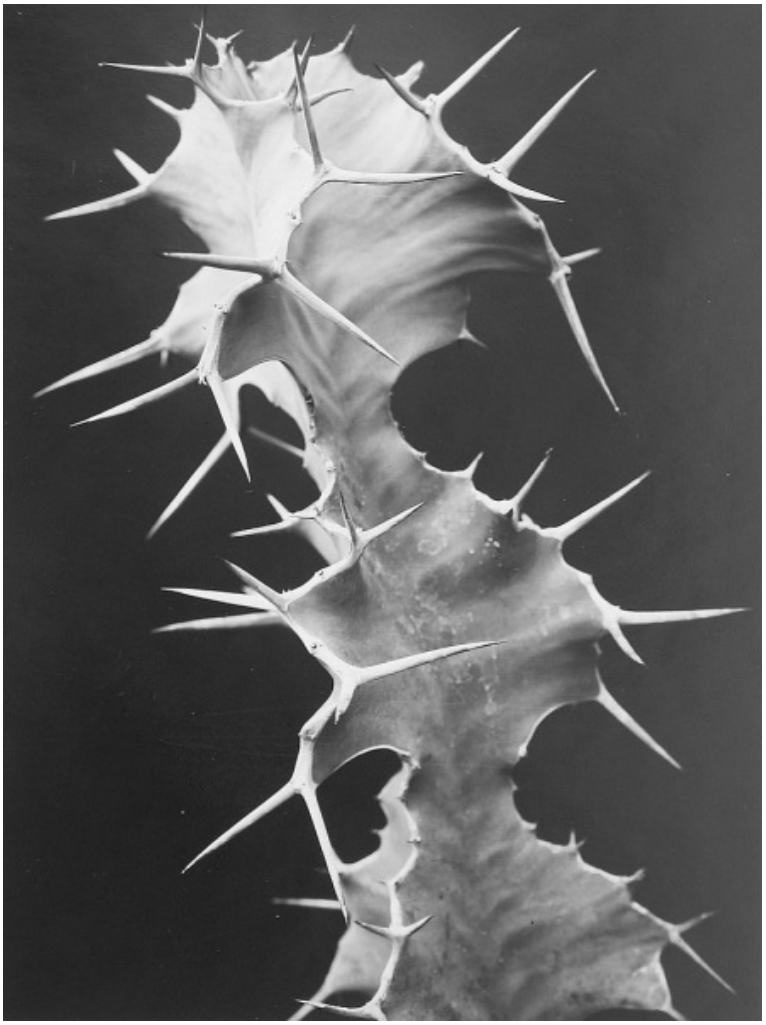


Figure 3.1. Albert Renger-Patzsch, *Euphorbia grandicornis*, 1923, gelatin silver print. © Albert Renger-Patzsch / Archiv Ann u. Jürgen Wilde, Zülpich / Artists Rights Society (ARS), New York, 2021.

environment, just as Renger-Patzsch insisted that the photographer must isolate himself from the ozone in the air. Considering these strange images, we might well wonder if it is not the act of going out into nature, but the act of photography itself that Renger-Patzsch posits as an antidote to the harmful effects of the urban atmosphere.

The Air of Objectivity

In order to appreciate how photography might, in itself, be seen as a corrective to the harms caused by the thick air of the metropolis, it is helpful to consider the works and discourse of New Objectivity photographers alongside that of their contemporaries in the domain of architecture, the discipline that is perhaps most intimately concerned with problems of

environment. In drawing a connection between these two domains, my aim is less to propose the architectural as a context for photography than to suggest a collaborative, mutually-reinforcing exchange between the architects of the New Building (*Neues Bauen*) and the photographers of New Objectivity. This, in itself, is hardly a new move. As the architectural historian Beatriz Colomina has argued, modernist architecture was disseminated in large part through the intervention of mass media forms like photography.[44] Architects were among the most frequent clients of New Objectivity photographers, and, by the 1930s, photographs had become an almost mandatory feature of architectural publications. Even more important than this commercial relationship, however, is a common aesthetic sensibility that united the streamlined contours, minimalist geometry, and airy openness of the interwar architectural modernism with the clean lines and sharp focus of New Objectivity photography. The partnership between interwar architecture and photography was thus not only pragmatic, but serendipitous. Architects and photographers became nothing less than allies, engaged in parallel projects to purify lived and pictorial environments. Objectivity was, as the famous Weimar cabaret song put it, quite simply "in the air."[45]

And this in more ways than one, for there was no more powerful slogan for the New Building than the words 'light, air, and sun,' which interwar architects and critics adopted from the Lebensreform movement as a shorthand for the world that they aspired to bring into being. In adopting this slogan, architects articulated their project in atmospheric terms, positioning their designs as an attempt to ameliorate the dark, musty, and unhygienic environment that resulted from the previous decades of unregulated growth. "The New Architecture," declared Walter

[44] Beatriz Colomina, *Publicity and Privacy: Modern Architecture as Mass Media* (Cambridge, Mass.: MIT Press, 1994).
[45] "Es liegt in der Luft eine Sachlichkeit." Titular song of a 1928 musical revue by Marcellus Schiffer and Mischa Spoliansky, which featured performances by Margo Lion and a young Marlene Dietrich.

Gropius, "throws open its walls like curtains to admit a plenitude of fresh air, daylight, and sunshine."[46] To achieve this goal, architects took advantage of innovations like steel-frame construction and plate glass to break through the narrow walls of the so-called rental barracks (*Mietkaserne*) that dominated working class housing in German cities. At its most extreme, one even finds promoters of the New Building calling for the complete dissolution of walls, such that architecture itself becomes a matter of air. As the architectural historian Sigfried Giedion exclaimed in *Building in France* (1928): "Cubes of air within, cubes of air without. Cubes of air down to the very smallest units […]. Maximum of air, minimum of walls!"[47]

This rhetoric of light, air, and sun continues to dominate our conception of the interwar period today, and it is one of the more modest goals of this chapter to defamiliarize this commonplace. For despite the very real strides that interwar modernists took in imagining a world of fresh air and light—a goal partially realized with the construction of housing estates like Siemenstadt, the GEHAG Siedlungen, and Neue Frankfurt—architecture, as the Berlin planner Martin Wagner recognized as early as 1932, was quite simply not equipped to solve the housing problem alone.[48] For even the sheerest of glass facades could introduce into the home only as much fresh air and light as the urban sky had to offer, and in cities dominated by smokestacks and dependent on coal consumption, this was precious little.[49] Indeed, in contrast

[46] Walter Gropius, *The New Architecture and the Bauhaus*, trans. P. Morton Shand (Cambridge, Mass.: MIT Press, 1965), 44.
[47] Sigfried Giedion, *Building in France, Building in Iron, Building in Ferroconcrete*, trans. J. Duncan Berry (Los Angeles: Getty Center for the History of Art, 1995), 168.
[48] Martin Wagner, *Das Wachsende Haus* (Berlin: Bong & Co., 1932). The Berlin planner Martin Wagner published this text alongside the famous Berlin exhibition "Licht, Sonne und Haus für Alle," arguing that the New Architecture was only a first step in the direction of solving the housing problem, which could only be carried through to completion with via a re-orientation of collective living towards nature, the abolition of private property, and development of alternative funding models.
[49] Amongst the architects of this period, Ludwig Hilberseimer is perhaps the one to engage with this problem most fully. In his *Metropolis-Architecture*, Hilberseimer specifically mentions the overwhelming grey "haze" of the urban atmosphere and argues that only by constructing high-rises and locating domestic residences in the upper floors of these buildings could access to light and air be assured. Ludwig Hilberseimer, *Metropolis-Architecture*, ed. Richard Anderson (New York: Columbia University GSAPP Sourcebooks, 2012), 277.

the optimistic discourse of architects and critics of the late 1920s, which rhetorically consigned the dust and smoke of the metropolis to the nineteenth-century past, other forms of cultural production from the interwar period offer a more fraught picture of the urban environment. To offer just one example, consider the atmosphere conjured by the journalist Frank Warschauer in the poem "Asphaltgesicht," which appeared in a collection of urban poetry published in Berlin in 1931:

> Mensch ohne Sterne, Asphaltgesicht,
> wie trägst Du die schmierigen Abende mit Dir herum,
> trüben Dunst, ausgeatmete Luft, ätzenden Dampf des Benzins,
> Teerbrodem, Geruch von Kot und Modern aus Kellern,
> Nacht ohne Wind und Tag ohne Licht,
> Hinweg,
> Mensch ohne Sterne, Asphaltgesicht.
>
> Man without stars, asphalt-faced,
> How you carry the greasy evening with you,
> Gloomy mist, exhaled air, petrol's corroding steam
> Tar fumes, the stink of filth and musty cellars,
> Night without wind and day without light,
> Away,
> Man without stars, asphalt-faced.[50]

It is difficult to imagine a greater contrast to the optimistic discourse of Giedion and Gropius than that presented by this mournful poem, where smoke, mist, and odors blend together to cover the sky and stain the bodies of those who live beneath it. To point to this contrast is, of course, not to invalidate the achievements of the New Building, but rather to qualify them. In the face of an urban environment dominated by smokestacks and still largely dependent on coal consumption, the best that architects could hope to achieve was, as Ernst Bloch would later put it, the creation of "vacuums cut in air and light."[51]

---

[50] Frank Warschauer, "Asphaltgesicht," in *Um uns die Stadt,* eds. Robert Setiz and Heinz Zucker (Berlin: Sieben-Stäbe, 1931). My translation. A more poetic translation appears in John Willet's book.

[51] Ernst Bloch, *The Principle of Hope, Volume 2*, trans. Neville Plaice, Stephen Plaice, and Paul Knight (Cambridge, Mass.: MIT Press, 1995), 736. Highly critical of architectural modernism, Bloch elsewhere refers to this as a "bourgeois vacuum." Bloch, 734.

In light of such accounts, we might pause to wonder how it was that the rhetoric of 'light, air, and sun' came to define our imagination of the interwar period in the first place. It is here that photography comes in: in what follows, I would like to propose that the world of light and fresh air that critics like Giedion proclaimed was, in large part, a visual affair dependent on the photographic production of clarity. But before turning to the question of architectural photography, it is worth considering one last remark on architectural style from the De Stijl painter, architect, and theoretician Theo Van Doesburg, which intimates the extent to which interwar architects themselves reflected on the relationship of aesthetics and atmosphere. Discussing his plans for the Maison d'artiste, an ultimately unrealized project that Van Doesburg designed in collaboration with Cornelis van Eesteren, Van Doesburg writes:

> Your atelier must be like a glass cover or an empty crystal. It must have an absolute purity, a clear atmosphere. It must also be white. The palette must be of glass. Your pencil sharp, rectangular and hard, always free of dust and clean as an operating scalpel. One certainly takes a better lesson from the doctors' laboratories than from painters' ateliers. The latter stink like apes. Your atmosphere must have the cold atmosphere of mountains 3000 meters high; eternal snow must lie there. Cold kills the microbes.[52]

A more perfect statement of hygienic modernism cannot be imagined, but what is relevant for our purposes is the way in which the architect imagines that the pristine environment of the mountains might be transposed into a domestic environment. This is no Lebensreform exodus into the fresh air of an unsullied nature, but the active production of atmospheric purity. Curiously, however, it is not to technology but to *aesthetic means* that the architect turns—to white paint, minimalism, and linearity. Van Doesburg stresses the hard, sharpened tip of his pencil, and one can easily imagine the clean lines it would put down on the drafting sheet. Looking back on the modern movement from the late 1960s, the architectural historian Reyner Banham would identify such an elevation of aesthetics as the fundamental failure of the New

[52] Theo van Doesburg, quoted in Nancy Troy, *The De Stijl Environment* (Cambridge, Mass.: MIT Press, 1983), 106.

Building's environmental project. "It was in Germany, more than anywhere else," he wrote (perhaps too harshly), "that the promise of improved environmental quality was most ruthlessly sacrificed on the altar of a geometrical machine aesthetic."[53]

Given the outsized role assigned to the visual in constructing the New Building's world of 'light, air, and sun,' the close collaboration of architects and photographers is hardly surprising. An astute publicist, Gropius took great care in selecting images for publication—his favourite image of the Fagus Factory, for instance, was made by Renger-Patzsch in 1928.[54] As Robin Schuldenfrei's research has shown, Gropius was not above retouching images to obtain the desired effect, removing the marble veining from a photograph of his own bathroom sink in order to present a sparser image.[55] That being said, architects and photographers appear to have, by and large, shared a set of aesthetic preferences. Engaged in their own struggle against pictorial haze, New Objectivity photographers would seem to have understood the importance of "intensity of light […], humidity of the air, and temperature" to the "optical image of architecture."[56] The sharp, rigorous images created by New Objectivity photographers thus presented a vision of architectural and photographic modernism at one and the same time.

This is above all apparent in the treatment of atmospheric phenomena in these photographs. As we have seen, photographers and critics associated with New Objectivity spared no words in critiquing the mist, fog, and heavy air of pictorialist prints. Atmospheric phenomena

---

[53] Reyner Banham, *The Architecture of the Well-Tempered Environment* (Chicago: University of Chicago Press, 1984). First edition published in 1969. Banham considered American architecture of the period more successful in introducing meaningful technological innovations to ameliorate the lived environment, including the development of improved systems of ventilation and air conditioning. Giedion himself would make a similar argument in his postwar book, *Mechanization Takes Command*, which focuses in large part on American technological achievements.

[54] Annemarie Jaeggi, "Fagus and Photography," *Fagus: Industrial Culture from the Werkbund to the Bauhaus* (Princeton: Princeton Architectural Press, 2000), 120.

[55] Robin Schuldenfrei, *Luxury and Modernism: Architecture and the Object in Germany, 1900-1933* (Princeton: Princeton University Press, 2018), 6-8.

[56] Hilberseimer, 277.

Figure 3.2: Arthur Köster, *Großsiedlung Britz (Gehag), Berlin-Neukölln, BA I/II, Hufeisensiedlung*, 1927, gelatin silver print. © 2021 Artists Rights Society (ARS), New York / VG Bild-Kunst, Bonn.

like clouds could, however, play an important role in New Objectivity photographs, so long as such elements did not intervene between the viewer and the object depicted. Consider, for instance, Arthur Köster's photograph of the Hufeisensieldung (Horseshoe Siedlung), where a strong horizontal bisects the image to divide the clouds in the sky from the structure below (Fig 3.2). The central cumulus mass in the sky is clearly integral to the visual logic of the picture, echoing in reverse the negative space of the garden below. However, the cloud in no way interferes with a clear presentation of the building's structural logic: the geometrical rigour of its lines, its division into a modular sequence of semi-circular bays, punctuated at regular intervals by windows which appear as neat dark rectangles against a white façade.[57] Indeed, the cloud itself has been registered with almost as much definition as the building, and in this respect we

[57] Of course, the photograph does not do a particularly good job of conveying the colour that was so important to its architect, Bruno Taut. The bright blue of the upper cornices and balconies registers on the image, thanks to the use of a yellow filter, in a dark shade similar to that of the sky.

might oppose the New Objectivity cloud to the more ambient atmospheric phenomena of pictorialist prints, which only partially reveal the object underneath, functioning as a kind of atmospheric screen, to use a term recently proposed by Antonio Somaini.[58] The cloud here, by contrast, has effectively become a figure: atmosphere congealed into form.[59]

To achieve such an image was no mean feat. Despite the leaps that photographic materials and technology had undergone since the days of Gustave Le Gray, when combination printing was required if one wanted to include both clouds and landscapes in a single print, the photography of clouds still required a high degree of ingenuity. Amateur photography magazines like *Deutscher Kamera Almanach* included regular columns on the topic. In one such article from 1929, a Dr. Phil Strauss of Berlin chronicled the many challenges facing photographers intent on capturing the cloud. As Strauss related, although the development of orthochromatic emulsion had extended the sensitivity of photographic plates and film, it nonetheless remained especially sensitive to blues, meaning that balancing exposure for the foreground and background continued to present problems for photographers.[60] To correct this problem, Strauss recommended the use of a yellow filter, which obstructed blue light so as to enable the registration of white clouds against a dark background.[61] Blue-sensitivity, however, was not the only challenge facing the cloud photographer. Halation—the blurring of edges where light areas

---

[58] Antonio Somaini, "The Atmospheric Screen: Turner, Hazlitt, Ruskin," in *Screen Genealogies: From Optical Device to Environmental Media*, ed. Craig Buckley, Rüdiger Campe, Francesco Casetti (Amsterdam: Amsterdam University Press, 2019).

[59] This ability to congeal the atmospheric into solid, bounded form was in fact something that the critic Hugo Sieker specifically celebrated in Neue Sachlichkeit photography, praising Renger-Patzsch's "ability to force even the most accidental and transient phenomena into pictures that are superbly organized, balanced, and structured. […] He can take an accidental configuration of clouds and bind it in a picture, as if by a spell." Hugo Sieker, "Absolute Realism: On the Photographs of Albert Renger-Patzsch (1928)," in *Photography in the Modern Era: European Documents and Critical Writings, 1913-1940*, ed. Christopher Phillips (New York: Metropolitan Museum of Art/Aperture, 1989), 112.

[60] Phil Strauss, "Die Landschaft mit Wolken," *Deutscher Kamera Almanach* 18 (1929): 58.

[61] Yellow filters were manufactured by companies like Lifa in various degrees of opacity, to accommodate a variety of weather and lighting conditions.

run up against darker areas of the image—presented another problem, and photographers like Renger-Patzsch were consistent in recommending the use of silver-heavy anti-halation plates to maintain the sharp edges.[62] Finally, even clouds that registered on the surface of the plate or film would not necessarily remain legible on the print, requiring careful attention to timing during development and printing.[63]

A photograph like Köster's was thus hardly a matter of pointing and shooting a camera to capture an objective reality. To ensure that not only the building, but also the cloud itself, registered as clearly defined figures required not only waiting for favourable weather conditions, but also a host of specialized materials and technical procedures during exposure, development, and printing.[64] Moreover, professional photographers like Köster, whose prints were destined for publication, faced the additional challenge of compensating for potential degradation during the reproduction process.[65] Wilhelm Lotz, the editor and de facto photography critic of *Die Form*, commented on this aspect of architectural photography in an article from 1929. Since "clean shots" were desirable, Lotz particularly recommended the halftone process for reproduction,

---

[62] Strauss, 58. Renger-Patzsch, "Ueber das Photographieren von plastischen Kunstwerken (1925)," *Die Freude am Gegenstand*, 37.

[63] Strauss, 57, 64. Panchromatic plates and films, introduced in the mid 1920s, extended the range of sensitivity even further, which was helpful in narrowing the difference in exposure required. However panchromatic emulsion came with another set of problems, most notably, it made developing much trickier, requiring the photographer to work in near complete darkness. In a 1930 article in *Das Deutsche Lichtbild*, the pictorial photographer Heinrich Kühn complained about the errors that could result from this blindness. Renger-Patzsch also indicated he avoided using panchromatic plates as much as possible (although without specifying why).

[64] It is also possible that some of Köster's photographs interwar photographs are also combination prints. A recent study on his work by Michael Stöneberg has not turned up any repeated cloud formations, the tell-tale sign of combination printing, however staff who worked at Köster's worshop in the 1950s related that they did sometimes resort to combination printing. If that was the case here, Köster may have made two exposures on site, one for the clouds, and one for the building and landscape, which would also account for the consistent lighting pattern. See Michael Stöneberg, *Arthur Köster: Architekturfotografie, 1926-1933: Das Bild vom Neuen Bauen* (Berlin: Gebrüder Mann, 2009), 70-71.

[65] An exchange between Renger-Patzsch and the Swiss architect Rudolf Schwartz also discusses this problem. Schwartz specifically instructed Renger to exaggerate lines and values in anticipation of reproduction.

insisting that "almost all other reproduction processes abscond the space and depth of the structure, resulting in a more painterly picture."[66]

For the curator Kurt Wilhelm-Kästner, who spearheaded the organization of the important *Fotografie der Gegenwart* exhibition of 1929, the active maintenance of the contours was a key feature of New Objectivity photography:

> One can speak of a 'New Objectivity' here that is analogous to painting […]. In photography, Objectivity expresses itself as a sharp reproduction of the object through clear articulation and near isolation from its surroundings and the background, penetratingly even lighting, the banishment of as much shadow as possible, or its utilization as a strong outlining element, and above all, a clear, distinct representation of objects with a clearly arranged formal structure.[67]

The extremes to which this separation of object and background could be taken in architectural photography is evident in a series of Köster photographs featuring the home of Bruno Taut (Fig. 3.3). The four photographs were published twice, first in Bruno Taut's *Ein Wohnhaus*, which appeared in 1929, and again later that year in *Die Form*, where they illustrated Lotz's article on architectural photography. On both occasions, the images were distributed vertically on a single page, as though aping a film strip. In his article, Lotz praised the photographer's ability to convey a sense of movement toward the house, yet what is perhaps most interesting about these photographs is the differential treatment of the background in each shot. The first boasts a white background; the second, white clouds against a dark sky; the third, a pale grey sky. Finally, in the fourth picture, the white background returns, now rendered even more severe by the sharp angle of the house, enhanced with a wide-angle lens. More than anything else, the differential treatment of the background across the four images demonstrates the status of the background as an independent—and to a certain extent, interchangeable—element of the picture.

---

[66] Lotz, Wilhelm. "Architekturfotos," *Die Form* 4, no. 3 (1929), 69.
[67] Kurt Wilhelm-Kästner, "Fotografie der Gegenwart: Grundsätzliches zur Ausstellung im Museum Folkwang Essen," *Photographische Rundschau* 66 (1929): 93-94.

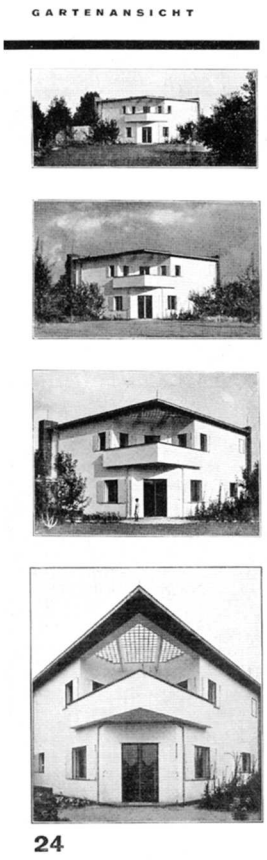


Figure 3.3:. Arthur Köster, *Bruno Taut: Haus Taut, Wiesenstraße, Dahlewitz bei Belin, Gartenseite*, 1926, halftone print. © 2021 Artists Rights Society (ARS), New York / VG Bild-Kunst, Bonn

Of course, the use of such a stark white background had definite pictorial consequences and its prominence in interwar architectural photography suggests a certain appreciation for its effect amongst both architects and photographers. Perusing a sample of such photographs, the appeal of the approach seems obvious enough (Fig. 3.4). The white background has the effect of rendering each line that much crisper, amplifying the streamlined contours, geometry, and airy openness of the modernist buildings represented in the photographs. If it is possible to imagine a visual expression for Bloch's "vacuum cut in air and light," this is surely it. Moreover, the white background has the additional effect of separating the object from the surrounding environment. This was important, for despite the optimistic rhetoric of architects and critics, urban centers across Germany remained plagued by smoke and soot emitted by factories and domestic

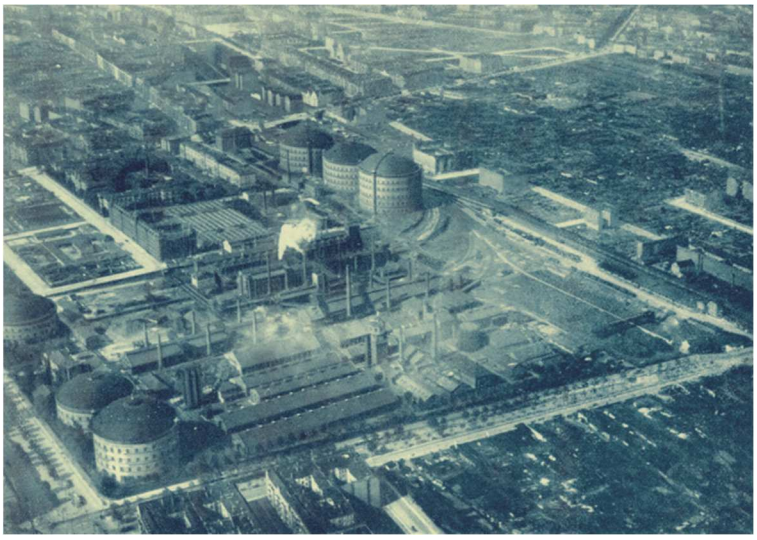


Figure 3.4: Arthur Köster, *Bruno Taut and Franz Hillinger, Wohnstadt Carl Legien (Gehag), Berlin-Prenzlauerberg*, 1930, halftone print. © 2021 Artists Rights Society (ARS), New York / VG Bild-Kunst, Bonn.
Figure 3.5: An aerial view of the Danziger Straße Gasworks in Prenzlauerberg, Berlin, circa 1926. Prenzlauerberg, at the time, was an industrial and working class neighbourhood, and the Wohnstadt Carl Legien depicted in Figure 3.4 was located only two blocks to the north of this facility, which remained operational until 1980.

chimneys, and many of the monuments of the New Building were located precisely in heavily industrial areas (Fig. 3.5).[68] In this context, we might say that the white background guards the modernist structure from the larger field beyond the architect's control.[69] It effectively endows the building with something of the optimism of the model, which exists in an abstract space of pure possibility (Fig. 3.6).

By the end of the 1920s, these backgrounds could be achieved in a few different ways. The first involved a process that existed since the 1860s, in which the background would be matted out or coated with India ink on the negative, resulting in a blank white surface on the final print.[70] Staff working in Köster's workshop during the 1950s indicated that such a procedure was often used in his postwar photographs, so it seems possible that it may have also been used during the interwar period.[71] Another possibility involved exploiting the panoply of new photosensitive papers offered by firms like Agfa. Hard grade papers could be used to produce high contrast prints that minimized the appearance of any stray visual incident, and this strategy could prove especially effective when used in combination with long-exposure shots.[72] But whatever the strategy employed, in neither case can the blank background be considered the automatic outcome of a purely mechanical process. Rather, these backgrounds were the result of

[68] Barry Bergdoll notes a similar effect in the architectural photographs of Edouard Baldus, which may be regarded as important precursors. See Barry Bergdoll, "A Matter of Time: Architects and Photographers in Second Empire France," in *The Photographs of Edouard Baldus*, ed. Malcolm Daniel (New York: Metropolitan Museum of Art, 1994), 111.
[69] The Wohnstadt Carl Legien, which appears in Figure 4, was located in the working-class industrial district of Prenzlauerberg in Berlin, in the immediate vicinity of the Danziger Straße Gasworks, which served as Berlin's largest gasworks and would continue operation until 1980. See Figure 5.
[70] For a longer discussion of the manipulation of skies in nineteenth-century photography, see Mia Fineman, *Faking It: Manipulated Photography Before Photoshop* (New York: Metropolitan Museum of Art, 2012), 45. Also see Dagmar Keultjes's excellent talk on the treatment of clouds in the Ernst Juhl Collection, "Let's Talk about the Weather: Negative Manipulation Techniques Used to Produce Atmosphere in Landscape Photography, 1850-1900," which can be consulted on the PictorialismusPortal of the Kunstbibliothek in Berlin.
[71] Stöneberg, 70.
[72] Conversation with Joel Snyder.

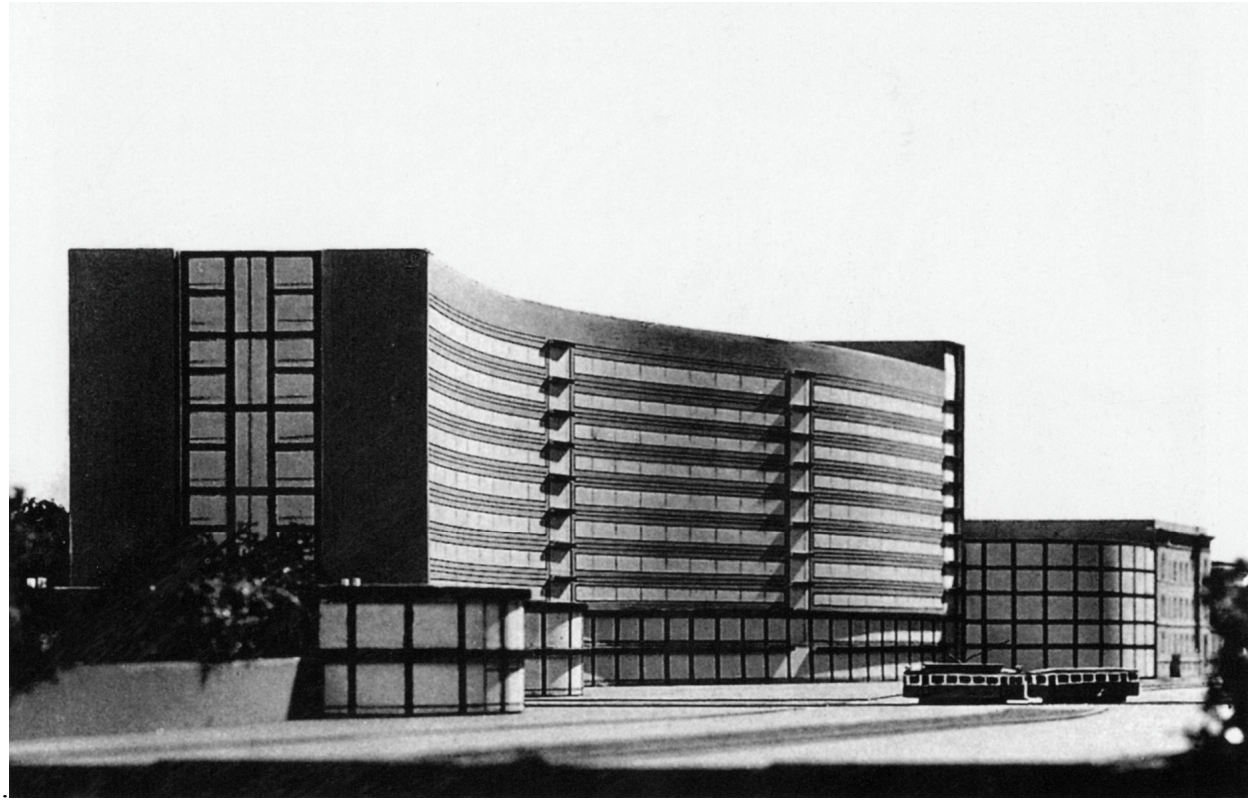


Figure 3.6: Arthur Köster, *Hans Scharoun: Entwufen Durchbruch durch die Ministergärten (Städtebauliches Gutachten), Berlin-Mitte, Modell,* 1927, halftone print. © 2021 Artists Rights Society (ARS), New York / VG Bild-Kunst, Bonn.

concerted intention and considerable technical finesse.

Albert Renger-Patzsch himself wrote extensively about backgrounds, which he considered a neglected but crucial aspect of the photographic image. Discussing such backgrounds, Renger-Patzsch insisted: "the background as such should not appear at all; it should be *experienced as air*, not as solid matter."[73] In a recent article on the photography of objects, Megan Luke aptly describes the backgrounds that result from such an approach as resembling a "uniform medium, a non-space that frustrates any opportunity to describe it as

[73] Albert Renger-Patzsch, "Ueber das Photographieren von plastischen Kunstwerken (1925)," 38. "Der Hintergrund als solcher tritt beim Bilde am besten gar nicht in Erscheinung, er soll wie Luft empfunden warden, nicht wie feste Materie."

either flat or deep, to describe it as anything at all."[74] Even more strangely, these backgrounds also resist an important aspect of the medium—namely, its role as a *mediating* substance. The objects depicted in Renger-Patzsch's photographs appear *against* the background rather than *within* it. The 'air' of which he speaks patently not the aerial medium of the romantic tradition, imagined by Herder as a diaphanous substance hovering between the object and beholder to enable perception.[75] Rather, it is an air without substance or qualities—an air so pure that it exists only as an abstraction.

There is a certain effortlessness in Renger-Patzsch's phrase, "the background should be experienced as air." Considered in isolation, this formula—like the white background itself—belies the attention and expertise that its production required. Renger-Patzsch's writings, however, are nothing if not practical. With regards to backgrounds, Renger-Patzsch more than once cautioned his readers to take care to avoid the reproduction of faults and flecks in the background, which he characterized as "especially annoying."[76] His advice ranged from how to select the correct materials for the right conditions (camera, lens, plates or film), to set the camera's aperture and time exposures in relation weather conditions, to best light objects, and even manipulate cloth backgrounds in and out of the studio. Air quality also entered into these considerations. In one article, Renger-Patzsch specifically cautioned the photographer to take care when loading and unloading film, since "every grain of dust and the smallest damage on the inverse becomes a disagreeably noticeable fleck or stroke after enlargement."[77]

---

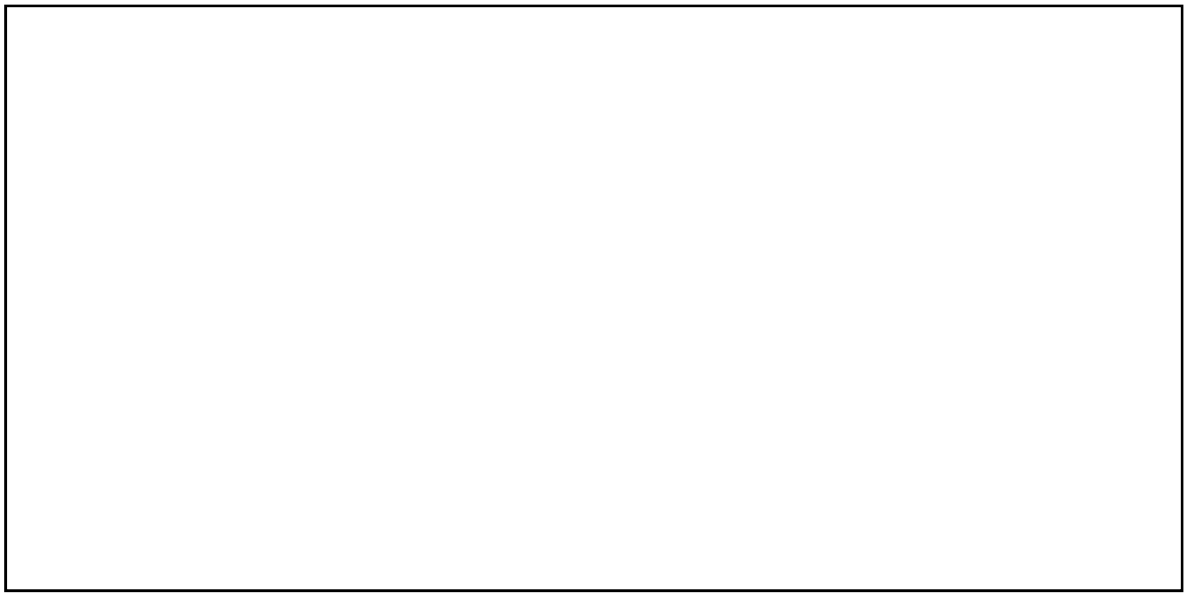
[74] Megan Luke, "Artificial Blindness," in *Photography and Sculpture: The Art Object in Reproduction*, eds. Sarah Hamill and Megan Luke (Los Angeles: Getty Research Institute, 2017), 138.
[75] Somaini, 169-170.
[76] Renger-Patzsch, 39.
[77] Albert Renger-Patzsch, "Winterphotographie und Schneeschuhsport," 51. Renger-Patzsch elsewhere relates his own preference for using plates, under most conditions. It seems likely that the vulnerability of film was one part of the logic behind this preference.

The lengths to which photographers went to ensure pristine backgrounds should not be underestimated. Recent research on the Thomas Walther Collection at the Museum of Modern Art has uncovered signs of retouching on a large number of interwar European prints, upsetting the truism that associates straight photography with the absence of manipulation. Of particular interest are the results of the analysis that the conservation scientist Hanako Murata conducted on the collection's Karl Blossfeldt works, which revealed a surprising amount of both additive and subtractive retouching on the surface of his prints.[78] This included the use of pencil or an aqueous medium to reinforce outlines (Fig. 3.7), as well as etching to remove specks and flecks from the background (Fig. 3.8). Similar signs of etching were also found on a number of other prints from the collection, including one by Renger-Patzsch. Indeed, for all his opposition to the embellishment of images through fine printing methods, Renger-Patzsch was not above retouching aimed at *cleaning* the surface of the print, and some of his vintage prints bear annotations on the verso instructing the printer to remove spots—"*entflecken*"—and sometimes even clouds and wires from the background.[79]

Taken together, these minute interventions speak not only to the high premium placed on sharp contours and clear background in the period, but also to a routine struggle that pitched photographers and printers against a number of atmospheric contingencies, both in the field (or

[78] Though Blossfeldt belonged to an older generation of photographers, his plant photographs became icons of Neue Sachlichkeit following their exhibition and publication in the late 1920s. Blossfeldt's prints were also exhibited alongside work of New Objectivity photographers in *Film und Foto* (Stuttgart, 1929) and *Fotografie der Gegenwart* (Essen and other locations, 1929). In addition, although many of Blossfeldt's negatives were produced around 1898, the prints in the MoMa collection have been dated to sometime between 1920 and 1932, the year of Blossfeldt's death. This is significant, since the retouching is on the print rather than the negative. The annotations on the back of the prints moreover show Blossfeldt's hand, confirming that these prints were produced either by the photographer or executed in close collaboration with him. See Hanako Murata, "Material Forms in Nature: The Photographs of Karl Blossfeldt," in *Object:Photo, 1909-1949*, eds. Mitra Abbaspour, Lee Ann Daffner, and Maria Morris Hambourg (New York: MoMA, 2014).

[79] Based on the examination of the verso of vintage prints in the collection of the Photothek of the Zentralinstitut für Kunstgeschichte in Munich. See Christine Kitzlinger, "Die Fotografien von Albert Renger-Patzsch in der Photothek der Zentralinstitut für Kunstgeschichte," in *Albert Renger-Patzsch: Architektur im Blick des Fotografen* (Munich: Zentralinstitut für Kunstgeschichte, 1997), 21.



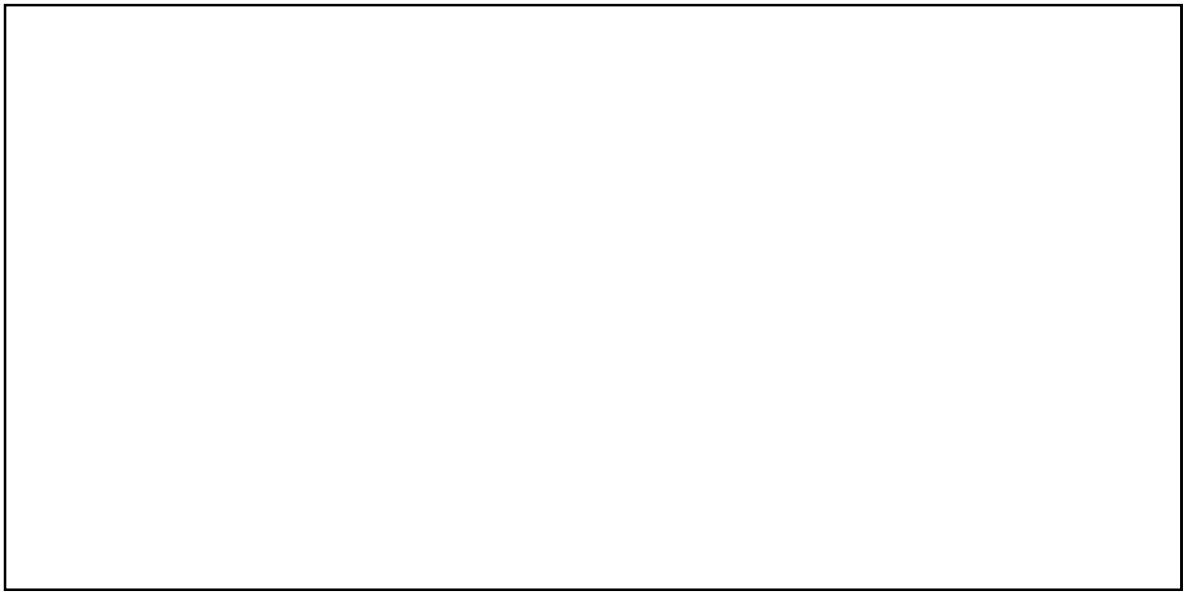


Figure 3.7: Karl Blossfeldt, *Saxifraga wilkommiana (Willkom's Saxifrage. Rosette of Leaves Enlarged 10 Times)*, gelatin silver print ca. 1920-32, negative ca. 1898-1928. The detail shows the application of an aqueous medium to reinforce the contours of the flower. From: Object:Photo: Modern Photographs from the Thomas Walther Collection. New York: MoMA, 2014. This image has not been included for reasons of copyright.
Figure 3.8: Karl Blossfeldt, *Chrysanthemum segetum (enlarged 8 times),* gelatin silver print c.1915-32, negative 1898-1932. The detail shows signs of etching to remove specks from the background. From: Object:Photo: Modern Photographs from the Thomas Walther Collection. New York: MoMA, 2014. This image has not been included for reasons of copyright.

studio) and the darkroom. For even if the photography of clouds remained a challenge, photographic emulsion was extremely sensitive to the atmosphere in other ways—so much so that German photography annual, *Das Deutsche Lichtbild*, accompanied each image with detailed records of atmospheric conditions, alongside other technical specifications. As historians of photography like Joel Snyder, Peter Geimer, and Elizabeth Hutchinson have argued, light, humidity, temperature, and air quality could impact the photographic process at every step, requiring a high degree of attentiveness to atmospheric conditions.[80] Flecks and spots on the print might occur as a result of dust, lint, or abrasions on the negative, or through the formation of air bubbles during development, spoiling its surface. Fogging and halation, by contrast, might occur due to light leakages, humidity levels, or traces of chemical fumes in the air of the darkroom. For this reason, manuals and trade journals offered detailed instruction on how to best control or compensate for these variables.[81] An ethos of environmental control was thus already part of photography, and integral to the radical clarity of the New Objectivity print.

Exposures in the Smoke

Such challenges were multiplied in heavily industrial areas like the Ruhr Valley district in North Rhine-Westphalia. Home to Krupp, Hoesch, and the companies of the Vereinigte Stahlwerke AG, among others, the Ruhr Valley had grown steadily since the 1860s to become the largest center of coal, iron, and steel production in Europe. By the late 1920s, the region was covered with an extended patchwork of mines, foundries, factories, and mid-sized cities that had

[80] Joel Snyder, "Res Ipsa Loquitor," in *Things that Talk: Object Lessons from Art and Science*, ed. Lorraine Daston (Cambridge, Mass.: MIT Press, 2008); Elizabeth Hutchinson, "Conjuring in Fog: Eadweard Muybridge at Point Reyes," in *Picturing*, ed. Rachael Z. DeLue (Chicago; Paris: Terra Foundation for American Art, 2016).
[81] Humidity and temperature were a frequent theme in *Gebrauchsfotografie: Das Atelier des Fotografen*, an annual trade publication that included regular columns with advice on how to equip and maintain a darkroom throughout the interwar period.

Figure 3.9: Map of the Ruhr district, published in the photobook *Der Gigant an der Ruhr* (Berlin: Albertus Verlag, 1928), showing the distribution of industrial sites and cities across the region.

sprouted up around and between these industrial sites (Fig. 3.9). The amount of dust and smoke released into the air by industrial production was prodigious enough to shroud the entire region with an almost impenetrable haze, which lifted only occasionally, when worker's strikes—or the French occupation of the Ruhr in 1923—brought production to a halt.[82] If a single grain of dust was enough to spoil a print, as Renger-Patzsch would have it, then one would be hard pressed to imagine an environment less hospitable to the aesthetics of New Objectivity than the dark and dusty Ruhr.

[82] Franz-Josef Brüggemeier, "A Nature Fit for Industry: The Environmental History of the Ruhr Basin, 1840-1990," *Envrionmental History Review* 18, no. 1 (Spring 1994): 41.

Nonetheless, the Ruhr became, over the course of the 1920s, a crucial point on the map of interwar photography, furnishing photographers with substantial institutional support, publication and exhibition opportunities, and commissions.[83] As art historians like Pepper Stetler and Rainer Stamm have demonstrated, the Ruhr-based Folkwang Museum—founded in Hagen in 1906, relocated to Essen in 1922—served as a veritable cradle for New Objectivity photography.[84] It was at the Folkwang's image archive and press that Renger-Patzsch secured his first professional position as a photographer in 1920, and it was in this context that Renger-Patzsch produced a number of the photographs that would appear in his celebrated photobook *Die Welt ist schön* (1928), which was received even at its time as a definitive statement of New Objectivity photography.[85] Such institutional support, however, could go only so far in compensating for the industrial environment of the Ruhr, especially when it came to producing pictures of industry. For, as we shall see, there existed a fundamental tension between the purified aesthetics of New Objectivity and the environmental realities of industrial modernity, which came to a head in Renger-Patzsch's industrial photography.

The Ruhr Valley was in fact an especially important site for Albert Renger-Patzsch, and one which he knew intimately. The photographer, who had made his start in the profession in Hagen, returned to the region in late 1929, having been offered a studio and darkroom at the Folkwang's new location in Essen. The city would continue to serve as the photographer's base

[83] The Folkwang Museum's publishing arm was an important force in the development and popularization of New Objectivity aesthetics, and the museum would later host a number of important photography exhibitions, including, most prominently, the *Fotografie der Gegenwart* exhibition in the winter of 1929. Industrial concerns of the region, meanwhile, served as an important source of commissions for photographers like Renger-Patzsch.
[84] Rainer Stamm, *Der Folkwang-Verlag: Auf dem Weg zu einem imaginären Museum* (Frankfurt: Buchhändler-Verein, 1999); Pepper Stetler, "The Object, the Archive, and the Origins of Neue Sachlichkeit Photography," *History of Photography* 35, no. 3 (Summer 2011): 281-295. In particular, Stetler has argued for the importance of the Folkwang's archival project to the development of New Objectivity's aesthetics of exactitude.
[85] In this respect, it is worth noting that much of the photo criticism cited in this chapter appeared in 1929, following the publication of *Die Welt ist schön*. Many of these texts also mention Renger's photobook by name, indicating just how quickly the photobook became synonymous with New Objectivity photography.

of operations until 1944, and this period proved an incredibly productive one for Renger-Patzsch. The success of *Die Welt ist schön* had secured his position as one of the leading photographers of his generation, and consequentially opened the doors to a number of commissions, exhibition, and publication opportunities. Renger-Patzsch quickly developed a reputation for architectural and industrial photography, which was cemented by the publication of two photobooks of his industrial work, *Wegweisung der Technik* in 1928 and the Werkbund-sponsored *Eisen und Stahl* in 1931, the latter of which was named one of the fifty "most beautiful" photobooks of the year by the Hermann Reckendorf Verlag.[86] Accompanied by a forward written by Albert Vögler, the General Director of the Vereinigte Stahlwerke AG, the photobook explored the economic prowess and aesthetic potential of German industry. This aesthetic potential is nowhere more apparent than in the book's architectural photographs, which, in a manner reminiscent of his earlier cactus works, present their subject in a series of tightly-framed, fragmented views that transform iron and steel skeletons into an abstract network of pristine dark lines against an undifferentiated ground.

The formal rigour of these photographs was admired by architects of his generation, many of whom were themselves engaged in an aesthetic reform of industry.[87] Shortly after the publication of *Eisen und Stahl*, Renger-Patzsch was engaged by the architects Fritz Schupp and Martin Kremmer to photograph the recently completed Shaft 12 of the Zollverein Mining Complex, located just to the north-east of Essen. This commission was only one of the many to arrive in the wake of Renger-Patzsch's successful publications, but in Zollverein 12 the

[86] Roland Jaeger, "Bleibende Dokumente des Neuen Sehens," in *Autopsie: Deutschsprachige Fotobücher, 1918 bis 1945, Band 1*, eds. Manfred Hetting and Roland Jaeger (Göttingen: Steidl Verlag, 2012), 264.
[87] Five photographs from *Eisen und Stahl* were reproduced in a 1931 issue of *Die Form*, alongside a review of recent photobooks by Wilhelm Lotz. In this review, Lotz specifically praised the spartan precision and tactile appeal of Renger-Patzsch's photographs, noting that, when looking at the photographs, "one almost believes that one could touch and feel the iron and steel, so immediately does the smoothness, roughness, and metallic affect the imagination." See Wilhelm Lotz, "Fotobücher," *Die Form* 6, no. 1 (1931): 28-37.

photographer encountered a subject whose reputation matched his own. Upon opening in February of 1932, Zollverein 12 was the most advanced facility of its kind in the region. Its integrated mine and coal washing plant boasted all of the latest technical innovations in ventilation and conveyer belts, making the facility more productive than the company's four other operating shafts combined—the financial crisis notwithstanding.[88] Zollverein 12 thus represented nothing less than the culmination of a decade-long process of modernization that thoroughly transformed the coal industry of the Ruhr, which until 1919 had remained largely dependent on hand and hoe mining.[89] The complex's functionalist design, with its neat horizontal articulations, exposed steel trusses, and curtain-wall windows would seem to have symbolized this modernization, promising the dawn of a new era of industry.

Indeed, Renger-Patzsch's photographs of Zollverein 12 transformed the structure into an industrial icon. Austere, clear, and calm, the pictures express a sense of confidence through a visual language that is equal parts modernist and classical (Figs. 3.10-13). Bathed in strong light that precisely articulates each edge, the complex's coal washing plant and double winding tower are presented as strong geometric masses against an undifferentiated ground, so white as to be almost blinding. Renger-Patzsch once described his desire to create a picture adequate to the "rigid lines of modern technology" and the "airy criss-cross of cranes and bridge," and with these pictures would seem to have achieved his goal.[90] Indeed, the photographs have an almost limpid

[88] Wolfgang Kemp, *Wir haben ja alle Deutschland nicht gekannt: Das Deutschlandbild der Deutschen in der Zeit der Weimarer Republik* (Heidelberg: Heidelberg University Publishing, 2016), 327. Kemp draws particular attention to the unemployment that was the result of the mine's increased efficiency.
[89] For more on the modernization of the coal industry in the Ruhr, see Chauncy D. Harris, "The Ruhr Goal-Mining District," *Geographical Review*, 36, no. 2 (April 1946): 194-221; J. Ronald Shearer, "Let's Talk About Efficiency: Politics and the Industrial Rationalization Movement in the Weimar Republic," *Central European History*, 28, no. 4 (1995): 483-506; and Franz-Josef Brüggemeier and Thomas Rommelspacher, *Blauer Himmel über der Ruhr: Geschichte der Umwelt in Ruhrgebiet*, *1840-1990* (Essen: Klartext, 1992).
[90] Albert Renger-Patzsch, "Ziele," in *Die Freude am Gegenstand: Gesammelte Aufsätze zur Photographie*, eds. Bernd Stiegler and Ann and Jürgen Wilde (Wilhelm Fink Verlag, 2010), 91.

Figure 3.10: Albert Renger-Patzsch, Zeche Zollverein (Essen-Stoppenberg), 1932, gelatin silver print. © Albert Renger-Patzsch / Archiv Ann u. Jürgen Wilde, Zülpich / Artists Rights Society (ARS), New York, 2021.
Figure 3.11: Albert Renger-Patzsch, Zeche Zollverein (Essen-Stoppenberg), 1932, gelatin silver print. © Albert Renger-Patzsch / Archiv Ann u. Jürgen Wilde, Zülpich / Artists Rights Society (ARS), New York, 2021.

quality. So sharp is the registration throughout that it is difficult to imagine any dust or smoke in the air—only the slightest hint of smoke can be surmised from the faint whiteness hovering around the rim of a chimney, a remarkable feat given the intense productivity of the mine (Figure 3.12). The clarity of the images is such that the viewer is left with the uncanny impression that nothing stands between the eye and the represented structure; even the shadows cast by the tower and its cables appear neat and precise on the brick façade below, as through produced through a direct impression.

The emphatic clarity and calm of Renger-Patzsch's pictures becomes even more apparent when contrasted with cinematic depiction of heavy industry in the films of Walter Ruttmann,

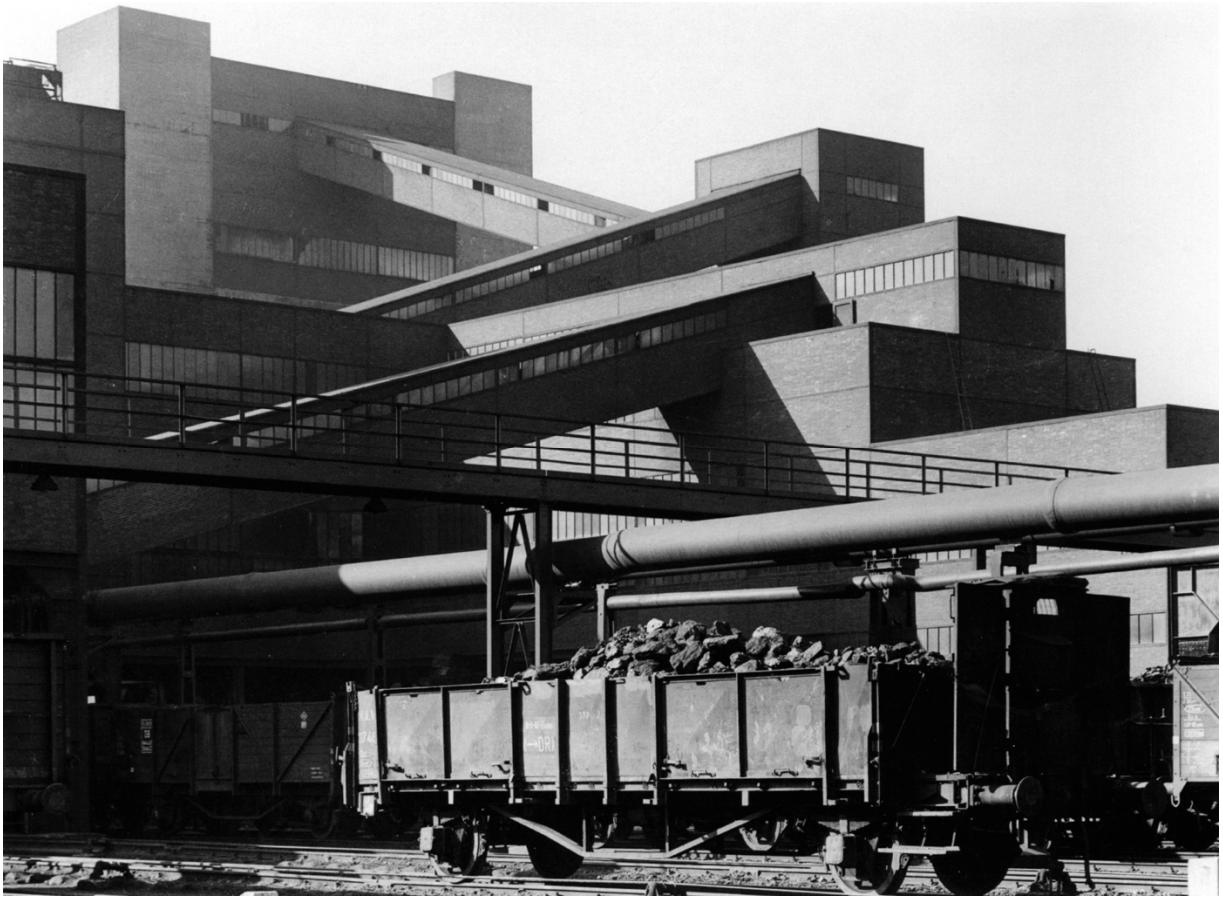


Figure 3.12: Albert Renger-Patzsch, *Zeche Zollverein (Essen-Stoppenberg)*, 1932, gelatin silver print. © Albert Renger-Patzsch / Archiv Ann u. Jürgen Wilde, Zülpich / Artists Rights Society (ARS), New York, 2021.

Albrecht Viktor Blum, and Dziga Vertov. Vertov's *Enthusiasm*, which toured Germany in 1931, presents the sites of industry roiled with smoke, sparks, and constant activity.[91] Machinery swings, chimneys belch, and enormous clouds of steam—at times multiplied by superimpositions—waft and eddy upwards, obscuring significant portions of the image. In Vertov's film, everything is movement. The agitated industrial atmosphere—excited and exciting—positions industry as the locus of inexhaustible dynamism and transformation. Nothing could be farther from Renger-Patzsch's photographs, where nothing but stillness would seem to

[91] Vertov's film includes one shot that is explicitly in dialogue with the work of Renger-Patzsch, which boasts an extreme low-angle shot of a chimney.

hang in the air. It is as though there is something almost *anti-cinematic* in Renger-Patzsch's photography, an aversion to movement that is co-extensive with an aversion to atmosphere.[92]

The aesthetic distance between Renger-Patzsch and Vertov, however, was no mere question of medium, but rather, corresponds to two very different visions of industrial modernity. If smoke, in Vertov's film, is celebrated as the outward sign of technological—and indeed, social—progress, in Renger-Patzsch's work it is sooner a problem to be overcome. In this respect, it is worth noting that, when writing about Zollverein 12, the architect Fritz Schupp placed particular stress on the light and air admitted by the structure's large windows.[93] This fact reminds us that the rhetoric of 'light, air, and sun' was as prominent a force in the Ruhr as it was in an urban capital like Berlin. Indeed, German architectural modernists had long been committed to an aesthetic reform of industry, which attempted to marry technological progress to a sanitized environment. The modern factory, as Walter Gropius insisted at a lecture delivered at the Hagen Folkwang in 1911, was to become nothing less than a "palace" of light and air.[94] The neat lines, strong contrasts, and pristine surfaces of Renger-Patzsch's Zollverein photographs express something of this aspiration towards an industry that was clean, calm, and bright.

Of course, there was no bigger threat to such a vision than the smoke and dust thrown into the air by industrial production. This problem had long been recognized by shrewd industrialists like Alfred Krupp, whose company would become an important sponsor of smoke mitigation efforts

[92] Just as Renger-Patzsch criticized the wind—which might blur the leaves of a tree, or carry in a cloud of smoke—he also criticized instantaneous photography, arguing "movement will never be a major subject of photography." Albert Renger-Patzsch, "Masters of the Camera Report," in *Albert Renger-Patzsch: Photographer of Objectivity*, eds. Ann and Jurgen Wilde and Thomas Weski (Cambridge, Mass.: MIT Press, 1998), 167.

[93] Fritz Schupp, "Gestaltungsfragen beim Industriebau, erläutert am Bau von Kohlenwäschen," *Zentralblatt der Bauverwaltung*, 52-54 (December 1932): 641.

[94] Walter Gropius, quoted in Schwartz, 55. "Palaces must be erected to Labor which give the factory worker, the slave of modern industry, not only light, air, and cleanliness, but which also let him sense something of the dignity of the great common idea which is carried by the totality."

in the region, including the creation of Germany's first garden city in 1907.[95] Writing to his photographer in 1867 in relation to a photographic panorama to be displayed in the Paris Exhibition of that year, Krupp detailed specific instructions as to how to deal with the problem of smoke:

> I would advise taking these photographs on a Sunday, because the workdays bring with them too much smoke, steam, and chaos […]. It is disadvantageous when too much steam makes the environment unclear, but it would be very pretty if somewhat less steam was emitted from as many places as possible.[96]

What is surprising in these instructions is less the industrialist's awareness of the promotional potential of photography than his prescient recognition of a fundamental contradiction with which modernist reformers would continue to grapple—namely, the incompatibility of an industrial aesthetic premised on clarity, cleanliness, and order with the material reality of the industrial environment. Industrial photography thus becomes nothing less than a battle with the elements.

This tension becomes clear when one considers Renger-Patzsch's photographs alongside contemporaneous photographs of the Ruhr. A relatively large sample can be found in the mammoth photobook *Der Gigant an der Ruhr* (1928), which included over three hundred photographs by no less than twenty photographers, reproduced in sheet-fed photogravure. Consisting largely of elevated, panoramic views of the urban and industrial landscape, these pictures show skylines dotted with smokestacks and public squares shrouded in thick, standing fog (Fig. 3.13). So pervasive was this fog that even the author of the volume's preface, an economic historian whose text ended with an ode to industry, could not help but acknowledge that "all the pictures are laden with something heavy and gloomy."[97] At times, the photographs

[95] Renger-Patzsch, incidentally, would take up residence in this garden city suburb upon moving to Essen.
[96] Alfred Krupp, Letter to the Krupp Photography Department, 12 January 1867. Reproduced in Brüggemeier and Rommelspacher. My translation.
[97] Hans Spethmann, "Einleitung," *Der Gigant an der Ruhr*, ed. M.P. Block (Berlin: Albertus Verlag, 1928), VII.

Figure 3.13: Dr. Eyermann (Regierungsrat, Dortmund-Gartengesellschaft), view of the Union Tower in Dortmund, from *Der Gigant an der Ruhr* (Berlin: Albertus Verlag, 1928), rotogravure.

exude an atmosphere so thick that it not only undermines the registration of contours, but also greatly diminishes the value range of the image. In such pictures, there are no true whites to be found, even in the smoke and sky. Instead, everything blends together in a muted grey.

These murky photographs allow us to appreciate the extent to which the strong contours, sharp definition, and stark tonal contrast of Renger-Patzsch's industrial photography were hard won. For the atmosphere that suffused the photographs of *Der Gigant an der Ruhr* was no pictorial artifice, but the quotidian reality of a heavily industrial region that had seen a steady decline in air quality since the 1860s. Nicknamed the 'coal pot' (*Kohlenpott*), the 'smoke-bound cities' (*Rauch verbindete Städte*), and 'black territory' (*Schwarzes Revier*), the Ruhr was famous

across Germany for its overcast skies and standing fog—a noxious mix of steam, coal dust, soot, and smoke filled with traces of carbon dioxide, carbon oxide, sulfur oxide, and ammonia.

The visual effect of this concoction was so peculiar that it quickly became the key identifying feature of a region that otherwise lacked obvious spatial markers. As the journalist and photographer Heinrich Hauser would write in his travelogue about the region, *Schwarzes Revier*, from 1930:

> How and where does the *Revier* begin? […]. It is a sign [of the *Revier*] when the air becomes hazy with yellow smoke, when the sunlight acquires a gangrenous hue. The *Revier* hangs in the air, with the smell of glowing red iron, scorched earth, sulfur, and ammonia. It announces itself with dust, ashen rain, and great fires, like an active volcano. ' [98]

Unsurprisingly, these atmospheric conditions had profound consequences for the health in the region. Since the 1910s, it was common medical knowledge that residents of the Ruhr—especially those employed in the coal mines, foundries, and factories—faced a much higher chance of death due to respiratory illness than their counterparts in Prussia. Indeed, it was the high mortality rate of miners in the region that initially inspired Louis Ascher's research on the harmful effects of smoke in the early 1900s.[99] Vegetation also suffered: the constant presence of ash, soot, and sulphur in the air caused a marked decline in the productivity of even relatively smoke-resistant crops like potatoes, to say nothing of more vulnerable produce like fruit.[100] Trees grew stunted and frequently lost their leaves, prompting widespread fears about the 'death of forests' (*Waldsterben*) (Fig. 3.14-15). So sensitive to sulfur was the local population of conifers

[98] Heinrich Hauser, *Schwarzes Revier* (Berlin: S. Fischer Verlag, 1930), 10-11. "Wie und wo beginnt das Revier? […] Ein Zeichen ist es, […] wenn die Luft diesig wird vom gelben Rauch, wenn das Licht der Sonne einen brandigen Ton bekommt. Das Revier liegt in der Luct mit einem Geruch nach glühendem Eisen, trockener, heißer Erde, Schwefel und Ammoniak. Das Revier kündigt sich an mit Staub, Aschenregen und großen Feuern, wie ein aktiver Vulkan."
[99] Ascher, 16.
[100] Brüggemeier, 41-42.

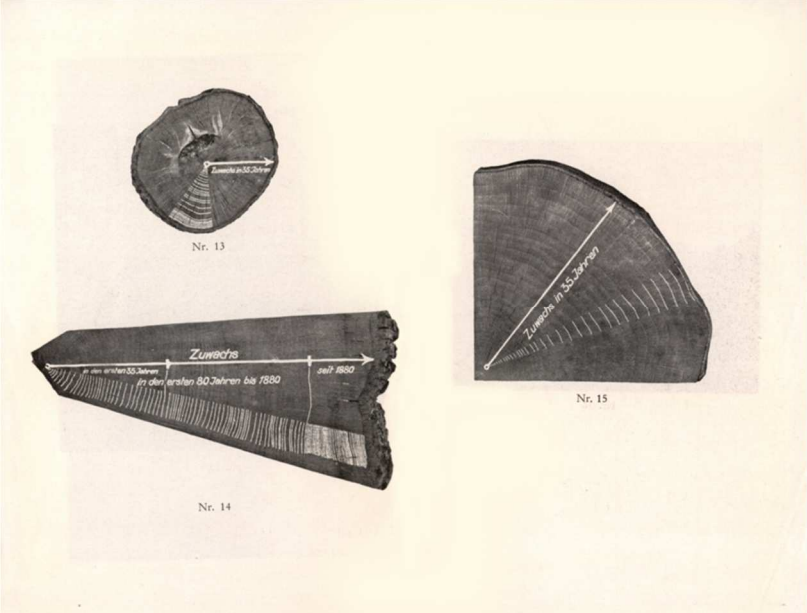


Figure 3.14: Sick trees in the Ruhr district, as documented in Heinrich Hauser's *Schwarzes Revier* (Berlin: S. Fischer Verlag, 1930).
Figure 3.15: Schematic showing the impact of smoke on the growth of trees in the Ruhr, published in a 1932 dissertation by August Helmig, *Der Wald und seine Erhaltung im rheinisch-westfälischen Gebiet* (Leipzig: Deichert, 1932).

that it became official policy, by the mid-1920s, to simply replace these trees with more hardy varieties, which were grown in nurseries and sold at a discount.[101]

The noxious atmosphere of the Ruhr also posed serious problems for photography, a medium historically understood as the art of light. The constant presence of smoke and fog in the air both limited access to sunlight and compromised visibility, veiling the horizon in a dense haze. "The view is never clear," wrote Hauser, "even on the brightest day, the air is so thick with the smoke of countless chimneys that one sees as though through dark glasses."[102] As Elizabeth Hutchinson and Lynda Nead have argued, heavy fog has historically presented a severe

[101] Ibid.
[102] Hauser, 21. "Die Sicht ist niemals klar, auch an den hellsten Sonnentagen nicht, man sieht immer wie durch trübe Brillengläser, so dick ist die Luft vom Rauch der zahllosen Schlote."

challenge to photographers, both in terms of its obscurity and humidity.[103] Although the cameras and emulsions available to the photographer of the 1920s and '30s boasted a greater sensitivity than those available to photographers of the 1870s, the chemical haze of the Ruhr was also more opaque than the water-based fog of the Pacific Coast, placing interwar photographers in a position similar to that of their nineteenth-century predecessors. Heinrich Hauser himself commented on this problem no less than twice in his book, exclaiming that "exposure time must more than five times!"[104]

This struggle against atmospheric conditions is evident in the photographs that Hauser included in his book. Though the pictures vary greatly in terms of subject matter and composition—including views of the industrial landscape, low-angle shots of modernist apartment buildings, close-ups of posters and signs, and snapshots of local children—the smoke of the Ruhr is a palpable presence in almost all the photographs, which are at times so poorly exposed that one might be tempted to dismiss them as the work of an amateur. Consider, for instance, the photograph of hanging laundry that appears shortly after Hauser's comment about exposure time (Figure 3.16-17). In this picture—which may also be the work of an uncredited Else Thalemann[105]—we see a clothesline hanging before a large industrial complex, which only partially emerged from the haze of the horizon. Slightly canted and off-center, the photograph has something of the quality of a snapshot. Both foreground and background are poorly

[103] Hutchinson, 121. Also see Lynda Nead, *The Tiger in the Smoke: Art and Culture in Post-War Britain* (New Haven: Yale University Press, 2017) for a discussion of the challenges of photographing amidst the London Fog in the 1880s and 1950s.
[104] Hauser, 13. "Gespenstig graulgelbes Licht (die Belichtungszeit muss mehr als fünfach verlängert warden!)."
[105] Thalemann was a Berlin based photojournalist who would later work with Ernst Fuhrmann at the Folkwang-Auriga Archiv. A number of the photographs reproduced in Hauser's book later turned up with Thalemann's stamp on the back, although the nature of the attribution and the relationship between Hauser and Thalemann remains uncertain. It is possible that the two collaborated, and also possible that Hauser may have sourced some of his images. Since Thalemann worked primarily as a photojournalist, many of her photographs are unattributed. For more information on Thalemann see Marion Beckers and Elisabeth Moortgat, *Else Thalemann: Industrie- und Pflanzenphotographien der 20er und 30er Jahre* (Berlin: Das Verborgene Museum, 1993) 6-7.

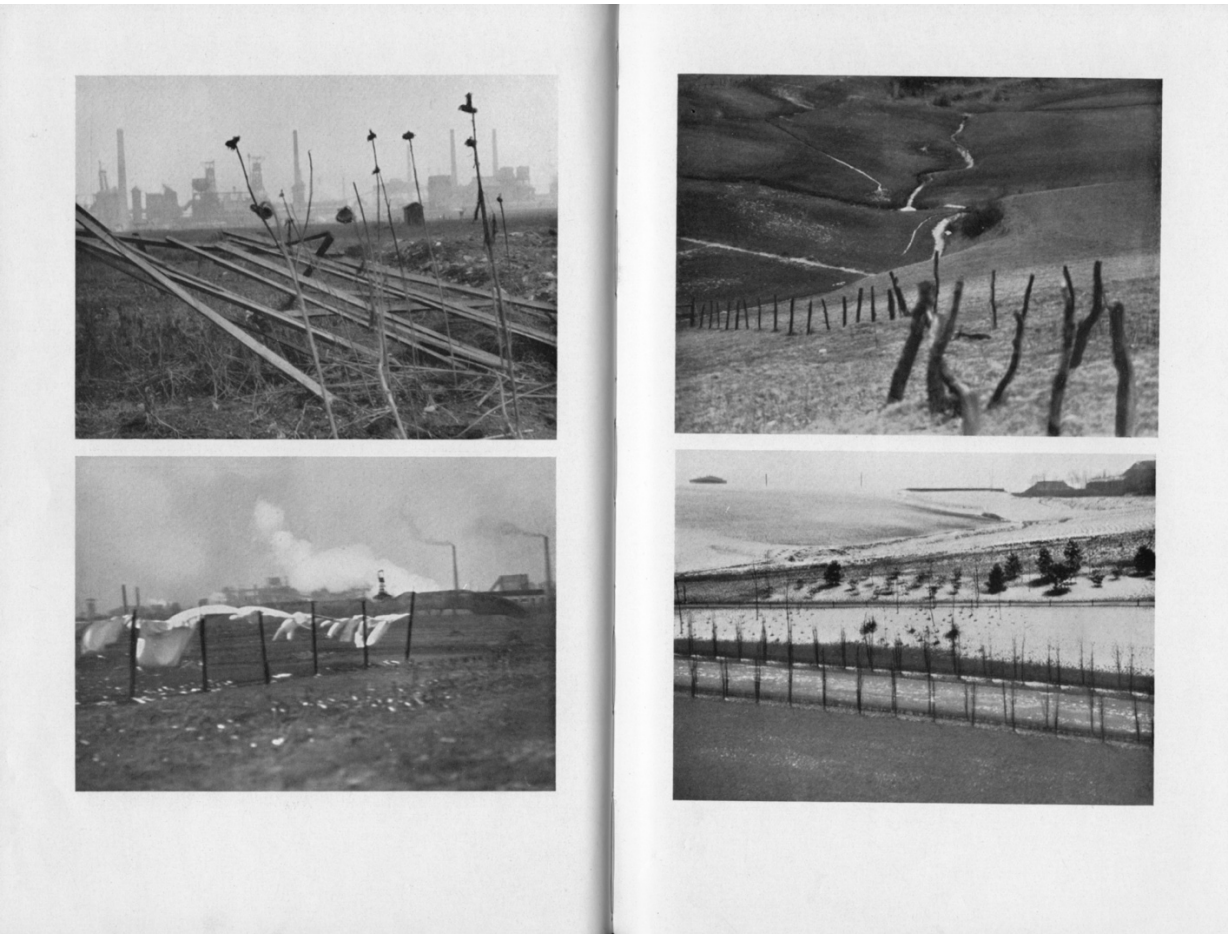


Figure 3.16: Two-page spread with halftone illustrations from Heinrich Hauser's *Schwarzes Revier* (Berlin: S. Fischer Verlag, 1930).

defined—the background is obscured by smoke and steam, while the speckled earth of the foreground is blurred with what may very well be a focal issue. But for all its haphazard quality, the picture does show signs of patience and intention. The thick cloud of smoke rising the background rhymes with the billowing laundry, whose whiteness strikes a pathetic note amidst the haze. We can only assume that it will not be long before this fluttering cloth, like the photograph itself, is stained by its environment.

The pathos of this photograph articulates what is in fact a key theme in Hauser's book: the fragility—and indeed futility—of the desire for cleanliness and clarity beneath the shadow of

Figure 3.17: Else Thalemann or Heinirch Hauser, *Nach der Wäsche (Industrie Ruhrgebiet)*, negative ca. 1929, print ca. 1950, gelatin silver print. Gift of the Sandor Family in honour of Professor James Zanzi. © The Art Institute of Chicago / Art Resource, NY. The paper used for this print shows that it was created from the original negative around 1950 by Else Thalemann (it bears her stamp on the back). A couple things differentiate this print from the image as it appears in Hauser's book. The image has been cropped on the right margin. In addition, the stakes supporting the clothesline seem to be slightly more defined in the version that appears in Hauser's book.

industry. As Hauser announces in his forward:

> The serious reader wants to see the subject [*Gegenstand*] represented in black and white with definite contours and thick lines. The author has above all strived for clarity but has also found that many things [*Gegenstände*] cannot be sharply outlined or painted in black and white. […Therefore, this book] wishes to be regarded as a magic lantern from the early days: images thrown onto a screen, often unsharp, poorly lit, and poorly exposed.[106]

[106] Hauser, 9. "Der ernsthafte Leser will den Gegenstand mit deutllichen Umrissen und dicken Strichen in Schwarz-Weiß gezeichnet sehen. Der Verfasser hat sich um Klarheit und Deutlichkeit überall bemüht, er hat aber auch gefunden, dass viele Gegenstände sich nicht scharf umreißen und nicht Schwarz-Weiß malen lassen. […] Es will betrachtet sein wie eine Laterna magica aus dem Anfang der Technik: Bilder auf eine Leinwand geworfen, oft unscharf, oft schlecht beleuchtet und schlecht aufgenommen."

Hauser here is knowingly drawing on the language of New Objectivity—with its ideals of sharpness, clarity, and the autonomy of the object. Besides the frequent references to photographic qualities and processes, his repeated use of the word *Gegenstand* seems almost calculated to evoke Renger-Patzsch's famous phrase, "*die Freude am Gegenstand*," or "joy before the object."[107] In doing so, Hauser frames his book as the end result of a conflict between a desire for clarity and a fog that was at once physical and epistemological. Indeed, it is not uncommon to find a similar metaphorical use of the terms '*scharf*' and '*unscharf*' in writing about the Ruhr from the late twenties and early thirties. Even the economic historian Hans Spethmann managed to muster a similar metaphor in his introduction to *Der Gigant an der Ruhr*, describing the region as one that simply did not allow for sharp delineations: "*Es läßt sich nicht scharf umreißen.*"[108] Rather than remain in the negative, however, Hauser here insists on the 'unsharp' as the only adequate way to represent the social and environmental realities of the Ruhr, which intermingled precisely in its smoke-laden air.

The photographs of *Schwarzes Revier* thus stand in stark contrast to the confident vision presented in Renger-Patzsch's photographs of Zollverein 12. Murky and indistinct, it is hard to imagine a picture more opposed to the graphic precision of the Zollverein images than that of Else Thalemann, where the smoke of the Ruhr—palpable as both a visible mass and a diffuse presence miring registration—expresses nothing so much as an uncertainty in the face of industrial modernity. This is not to say that either Thalemann or Hauser offer an indictment of modernity—that, also, would be too neat and definite. The photographs of *Schwarzes Revier* do not present industrialism as something one might call ugly or distasteful; on the contrary, the clouds of smoke and irresolute surfaces that one encounters in these pictures have an appeal of

[107] Albert Renger-Patzch, "Die Freude am Gegenstand," *Das Kunstblatt* 1 (1928): 19.
[108] Spethmann, VIII.

their own. But the appeal is one to which the viewer can only respond with hesitance. Steeped in the dense smoke of the Ruhr, the unsharp quality of these pictures reminds us that the air of industrial modernity cannot be so easily grasped, manipulated, and controlled.

Quite a different case with the Zollverein photographs, whose radical clarity holds out the promise of a rationalized, modernist industry that is at once hygienic and productive. When considered alongside the photographs of *Schwarzes Revier*, however, the neat lines, dramatic contrasts, and immaculate ground of Renger-Patzsch's pictures begin to seem almost improbable. One begins to wonder: how long did the photographer have to wait for sunlight bright enough to cast such stark shadows? How long was the plate exposed, to extract such distinct lines from the dusty air? And what of the ground against which the structure stands, so uniform and immaculate? Is this the result of a long exposure, of high contrast printing, or has it been helped along— *entfleckt?* Though the answer to these questions remains uncertain, what the comparison makes clear is the degree to which a negotiation with the industrial environment lies hidden beneath the confident clarity of Renger-Patzsch's photographs. To banish the heavy atmosphere of the Ruhr, as we have seen, was no easy task, requiring both an adroit command of the photographer's tools and the acumen to manage, finesse, and bend an adverse environment to one's will. Renger-Patzsch's photographs of Zollverein 12 thus emerge as nothing less than a pictorial intervention into a compromised environment, and it is perhaps in this intervention, more than anything else, that the power of his photographs lies. For although Renger-Patzsch's intervention into the environment was one that could exist only on the surface of the print, to extract pictorial clarity from the thick air of the Ruhr was to demonstrate a mastery over the environment that architects and industrialists could only imagine.

Can the Camera Breathe in a Vacuum?

But is the world presented in Renger-Patzsch's Zollverein photographs a world of fresh air, or something altogether stranger? The longer we look at these spartan pictures, the more unsettling they become, for the very same qualities that demonstrate Renger-Patzsch's mastery of the environment—his ability to clear the air—also work to destabilize the space of representation. The uniform sharpness, the emphatic precision of each line, and the undifferentiated background on which the object stands deprive the viewer of important depth cues, causing our apprehension of space to fluctuate. At times, the architectural object seems to rear upwards; at others, it collapses into a graphic pattern against a flat white ground. Megan Luke has observed a similar effect, arguing that the volatile representational field of Renger-Patzsch's photographs "frustrates our attempts to see the spaces they represent as real, simply because they appear to be waiting for us to walk through them."[109] It is as though, in expelling the dusty air of the Ruhr, Renger-Patzsch has left the viewer caught in an oscillation between object and background, with nothing to mediate the distance between the two. Indeed, the longer we dwell *with* these pictures, the more difficult it becomes to imagine dwelling *within* them. How could we, when even the last vestiges of air would appear to have been evacuated from the space of representation?

We might say, then, that Renger-Patzsch's photographs raise the threat of the vacuum as the outer limit of an aesthetics of clarity. Indeed, the vacuum has long served as a canonical trope in art historical discussions of New Objectivity, from Ernst Bloch to Helmut Lethen and Wieland

[109] Luke, 147. Devin Fore also makes a similar point in relation to the white grounds of Moholy-Nagy's photomontages. Fore cautions against mistaking the white page for a "stable ground of representation," noting that the arrangement of isolated objects and perspectival lines on a white ground sooner results in a space that is "not gradual and continuous, but multiple and planar." Although Fore opposes Moholy-Nagy's photomontages to Renger-Patzsch's straight photography, this argument is in fact productive in relation to much of Renger-Patzsch's work, which, for all their apparent 'straightness' nonetheless refuse to cohere into a unified field. See Devin Fore, *Realism After Modernism: The Rehumanization of Art and Literature* (Cambridge, Mass.: MIT Press, 2012), 22, 67.

Schmied, the latter of whom has described the space of New Objectivity as a "glassy space" in which "the air itself often seems to have been pumped out."[110] As we have seen, however, the vacuous spaces of New Objectivity cannot be so easily separated from the ideal of fresh air that animated interwar modernism. For no matter how evacuated the space of Renger-Patzsch's photographs may seem, we must keep in mind that the photographer himself maintained that his backgrounds should be "experienced as air."[111] In so highlighting Renger-Patzsch's words, my intention is not to call such a reading anachronistic, but rather, to suggest that the interwar fantasy of fresh air coexisted in a precarious tension with the threat of the vacuum. Ultimately, the question is not whether these photographs present a world of fresh air or a vacuum, but how such seemingly contradictory ideals could come into such close proximity in the first place.

To answer this question, it is helpful to revisit the passage from Thomas Mann with which this chapter began.[112] At this point, it should be plain that this passage is less a description of fresh air than a fantasy about it—and an emphatically modernist one at that, which is echoed in the statements of countless architects, photographers, and critics of the interwar period. Indeed, there is a certain morphological congruence between Mann's mountain air and the clear air imagined by Renger-Patzsch. In both cases, fresh air emerges as an abstraction, one which can be described and depicted only through negation. At issue, then, was less a question of purity than purification—and how could it be otherwise for a generation of interwar modernists who lived, worked, and breathed the adulterated air of industrial modernity? The world of fresh air imagined in the interwar period was thus not a world that might be found out in the unsullied

---

[110] Wieland Schmied, *Neue Sachlichkeit and German Realism of the Twenties* (London: Arts Council of Great Britain, 1978), 13-15. Also see Helmut Lethen, *Neue Sachlichkeit, 1924-1932: Studien zur Literatur des "Weißen Sozialismus* (Stuttgart: Metzler, 1970) and Lethen, *Cool Conduct: The Culture of Distance in Weimar Germany* (Los Angeles: University of California Press, 2002), both of which are permeated with references to the vacuum.
[111] Renger-Patzsch, "Ueber das Photographieren von plastischen Kunstwerken," 38.
[112] Mann, 8-9. As a reminder, the passage reads: "It was fresh—that was all. It lacked odor, content moisture; it went easily into the lungs and said nothing to the soul."

reaches of the natural world, but one that required active production through processes of filtration and negation.

In this sense, the vacuum thus emerges as the logical outcome of the interwar fantasy of fresh air. Rather than depict a world of fresh air or a vacuum, then, we might say that Renger-Patzsch's photographs of Zollverein 12 reveal the dialectical tension in which these two environmental imaginaries co-existed. By bringing the interwar aesthetics of clarity to its extreme, however, Renger-Patzsch's photographs also disclose a fundamental disjunction between pictorial and lived environments. For while there are no constraints on the degree one might purify a pictorial surface, it is quite a different case when it comes to lived environments. The unsettling quality of his photographs corresponds above all else to the question: how rarefied can the air become, before it precludes human habitation? Although it is difficult not to be impressed by the sheer confidence of Renger-Patzsch's vision, there remains something positively aggressive about its purity. Indeed, the longer that one looks at his photographs, the more one begins to suspect that they present an environment as inimical to human habitation as the industrial atmosphere that has been dispelled from the surface of the print. For while the camera, perhaps, can breathe in a vacuum, the human viewer cannot.

CONCLUSION

PHOTOGRAPHING THROUGH THE FOG

This dissertation has endeavoured to demonstrate how the concrete stuff of a man-altered atmosphere came to inflect both the material practices of photographers and filmmakers and the language and concepts of art criticism during a key moment in the history of modern media aesthetics. Moving from the rare urban pictures of pictorialist photography, to the smoke effects of studio cinema, to modernist pictures of heavy industry, it has charted a series of overlapping attempts to create a modern visual language capable of metabolizing the smoke and dust of industrial modernity. In doing so, I have strived to emphasize both the permeability and disjunction of the photochemical image and the historical environment, positioning photography and film as at once vulnerable to the contingencies of the material environment in which they were produced, and as a field of operation in which this man-altered environment and the human relationship to it could be negotiated and rearticulated. Yet as this dissertation's trajectory from atmospheric density suggests, the most persuasive of these strategies was ultimately to banish the elements of the industrial atmosphere from the space of representation, allowing the photographic image to emerge, in the absence of meaningful environmental reform, as something akin to an environmental intervention.

To consider photographic media in this manner might seem strange from the standpoint of the present, as we grapple with a new reality of climate crises, airborne pandemics, and environmental racism. It would be all too easy to point out the many ways in which the 'aesthetic solutions' explored in this dissertation failed. Though this failure must be recognized as such, the more difficult task is to recognize the extent to which these aesthetic strategies were, in another sense, all too successful in promulgating a kind of environmental false consciousness, suggesting

that the smoke and dust of extractive modernity could be variously regarded as beautiful, manipulated, or even eliminated with the help of technologies that were both dependent on and contributors to the ongoing degradation of the earth and its atmosphere. Understanding how such misconceptions could pertain is an equally difficult task, yet it is pressing one, since these modernist fantasies and their aesthetic correlates continue to perform ideological work to this day.

In this dissertation, I have approached my objects through a materialist lens in order to chart how these aesthetic strategies acquired such persuasive power. By way of conclusion, however, I would like to offer one last, concrete example from the realm of popular media. In January 1931, only a year before Renger-Patzsch set about photographing Zollverein 12, an article entitled "Fotografieren durch Nebel" ("Photographing through Fog") appeared in the popular science monthly *Die Koralle*. Its title would seem calculated to surprise and intrigue, holding out the promise of a technological solution to the problem of urban smog. Yet what is perhaps most surprising about this article is that it seemed, to in fact, deliver on this promise.

The author of the article, one Dr. H. von Grünburg, began with a discussion of the visible spectrum and two types of light that lay just beyond it: ultraviolet light and infrared radiation. Ultraviolet light had long been at the center of photographic practice and photochemical research, being the type of light to which photographic emulsions are most sensitive. Around the turn of the century, it also entered popular medical discourse. Not only did scientific research on the 'disinfecting' power of ultraviolet light provide a scientific rational for the Lebensreform call for 'light, air, and sun,' it also linked the practices of early twentieth-century photography and film to this movement in practical terms. By the 1920s, however, this interest in the medical

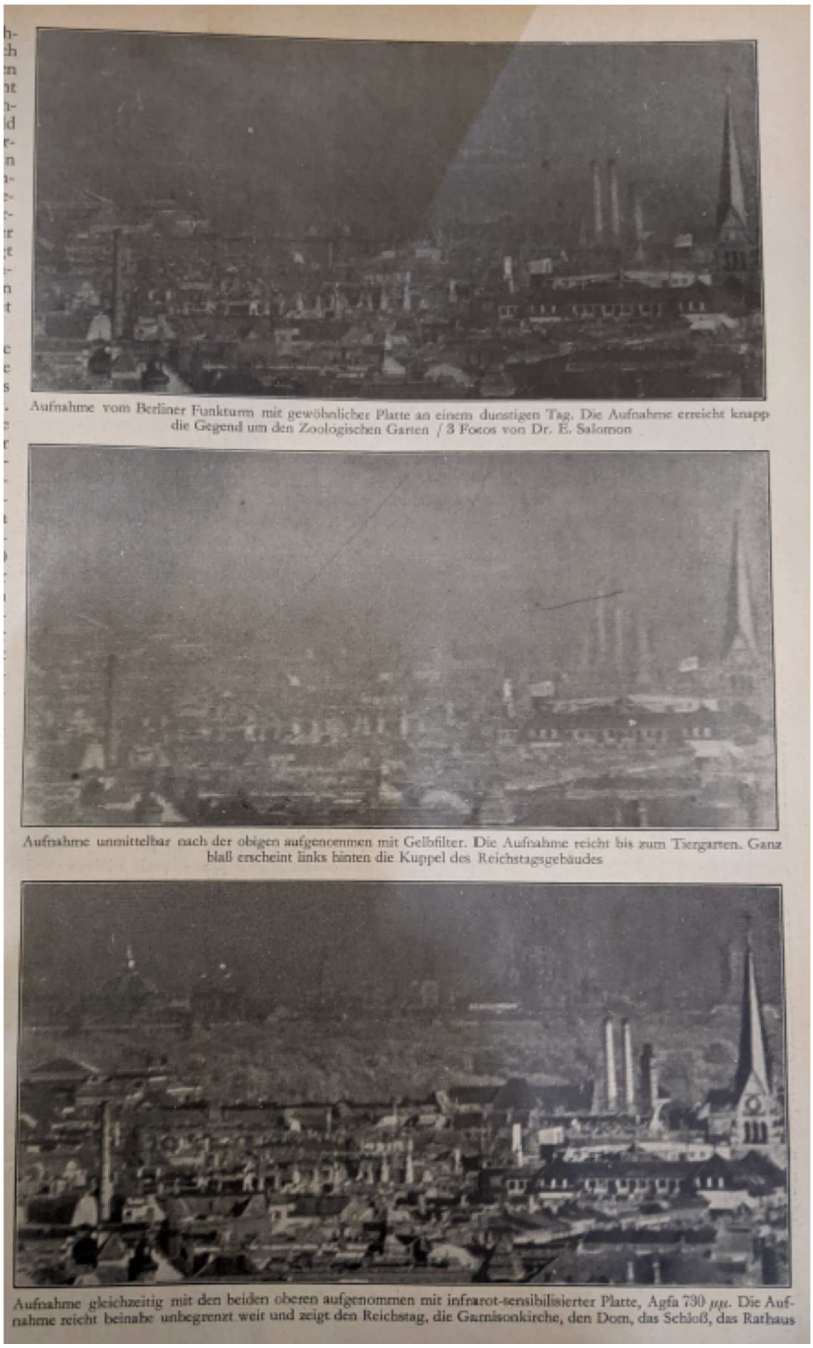
potential of ultraviolet light had led to a whole industry of UV-therapies, which remained popular well into the 1930s. As Grünburg related,

> Today ultraviolet rays are no longer only tangible to the physicist with his extended sensory apparatuses; in every third shop you can purchase a new, 'healthy,' brown holiday skin, produced by ultraviolet rays from the poor city dweller's artificial sun.[1]

Here, it is evident how far we've come from the country excursions and sunbathing practices of the early twentieth-century Lebensreform movement. Although the problem of urban air pollution remained a central concern, the solution to this problem now involved not a retreat into the open air, but the embrace of technology. Artificial suns, healthy brown skin for sale in shops across the city—here we've arrived at the alienated word of second nature that was the central subject of theorists like Walter Benjamin and his Frankfurt School colleagues. The uncoupling of ultraviolet light from the sun, moreover, aligns neatly with the abstracted understanding of light and air found in the discourse of both photographic and architectural modernism. With such devices on hand, is it any wonder that interwar modernists evinced such confidence in the potential of technology to produce an ameliorated environment?

The second type of light discussed by Grünburg—infrared radiation—is more interesting still. This long-wave radiation, just beyond the opposite end of the visible spectrum, had become a prominent subject of research during the First World War, above all in the context of aerial photography. Amongst the most persistent challenges of aerial photography was a phenomenon that became known as "aerial haze," the result of actinic (that is, blue and ultraviolet) light reflected back into the camera by particles of water or dust suspended in air between the photographer and the terrain below.[2] To combat this effect, photochemists conducted laboratory

[1] H. von Grünburg, "Fotografieren durch Nebel," *Die Koralle: Monatshefte für alle Freunde von Natur und Technik* 6, no. 10 (January 1931): 473.
[2] For more information on this phenomenon, see the Eastman Kodak Research Laboratory, *Aerial Haze and its Effect on Photography from the Air* (Rochester: Eastman Kodak Company, 1923), 11.



Aufnahme vom Berliner Funkturm mit gewöhnlicher Platte an einem dunstigen Tag. Die Aufnahme erreicht knapp die Gegend um den Zoologischen Garten / 3 Fotos von Dr. E. Salomon

Aufnahme unmittelbar nach der obigen aufgenommen mit Gelbfilter. Die Aufnahme reicht bis zum Tiergarten. Ganz blaß erscheint links hinten die Kuppel des Reichstagsgebäudes

Aufnahme gleichzeitig mit den beiden oberen aufgenommen mit infrarot-sensibilisierter Platte, Agfa 730 $\mu\mu$. Die Aufnahme reicht beinahe unbegrenzt weit und zeigt den Reichstag, die Garnisonkirche, den Dom, das Schloß, das Rathaus

Figure 4.1: “Fotografieren durch Nebel,” *Die Koralle* 6, no. 10 (January 1931).

experiments with a range of coloured filters and sensitized emulsions. Over the next decades, the solution that emerged was to use a yellow to red filter in combination with infrared emulsion. The filter served to hinder actinic light from entering the lens, allowing only longer wavelengths to reach an emulsion sensitized specifically for shorter wavelengths ranging from red to infrared.

By the early 1930s, one could purchase infrared plates and film commercially from firms such as Kodak and Agfa.[3]

On the ground, the utility of infrared photography soon suggested itself as a way combat the dense air of urban centers. Illustrating Grünburg's article was a series of panoramic shots photographed from Berlin's radio tower (Fig. 4.1). The first shows a picture taken on a "usual plate" on a "hazy day." As both the image and the caption confirm, the camera's reach "barely extends to the Zoological Garden." The second image was produced using a yellow filter, which extends the view east towards the Tiergarten. Finally, the third image was produced using a infrared-sensitized plate from Agfa, extending the visual field to the Reichstag, the Garnisonkirche, the Cathedral, and even the Rathaus near Alexanderplatz. Here, photography quite literally cuts through the fog hanging over the city, extracting from the urban skyline a clarity that existed nowhere except on the surface of the photographic plate.

Literalizing photographic modernism's pursuit of an ever greater transparency, the use of infrared photography to cut through the polluted air of the metropolis not only suggested a technological solution to the environmental problems of technological modernity, it also demonstrates the extent to which the modernist environment presented in photographic media should be regarded as profoundly constructed. Renger-Patzsch himself spoke of using a yellow filter to "reach a clear distance," a practice which remains current in analogue photography to this day.[4] Alongside the darkroom and printing practices examined in the previous chapter, such techniques suggest that we should be skeptical when regarding the visual archive of twentieth-

[3] Agfa also produced infrared film stock, which was often used for artificial night shots. Leni Riefenstahl was a pioneer in the use of infrared stock, which she employed (on the recommendation of Béla Balázs, to obtain a number of "moonlit" cloud shots in the film.
[4] Renger-Patzsch, "Pflanzenaufnahmen," 60.

century modernism, just as we should be skeptical, following critics like Ernst Bloch and Reyner Banham, of its environmental claims.

Even more fundamentally, though, such practices suggest a disjunction between the visible world and that captured by photosensitive media which goes beyond the ideological. Let us return to the case of infrared photography. It would be easy to interpret this technological development as a leap forward, going beyond the bounds of human perception, beyond the bounds of previous photographic emulsions, to make the invisible visible. Yet this making visible was itself premised on the making invisible of the particles of dust suspended in the air. Just as Etienne-Jules Marey first had to filter the air through a silk gauze in order to obtain the graphic clarity of his photographs of aerial movement, here, the modernist project of "making visible" is premised on the calculated suppression of environmental factors.

To return to the question that forms this dissertation's title, then, we might say that to answer the question of how to photograph the air, one must first decide what merits admission into the space of representation. This in turn leads to a question of value, as well as a question of purpose, both of which are profoundly ideological. The works discussed in this dissertation can thus be understood as objects that at once advanced desires for an ameliorated environment and provided a 'smoke-screen,' to indulge in the metaphor, that concealed the continued—indeed, accelerated—degradation of the planet. If they provide no answers to the challenges we face today, they nonetheless offer a chance to reflect on the potential and limitations of aesthetic solutions to environmental crisis. Failures, too, can provide valuable lessons.

BIBLIOGRAPHY

Abbaspour, Mira et al. *Object:Photo: Modern Photographs from the Thomas Walther Collection, 1909-1949*. New York: MoMA, 2014.

Anderson, Paul L. *Pictorial Photography: Its Principles and Practice*. Philadelphia: J.B. Lippincott Company, 1917.

Anonymous. "Aus der Werkstatt." *Ufa-Magazin* 2, no. 23 (3-9 June 1927).

----------. "Daguerreotypes at the Crystal Palace." *Humphrey's Journal of the Daguerreotype and Photographic Arts and the Sciences and Arts Pertaining to Heliography* (15 August 1953): 139-40.

----------. "'Der erste Berliner Gasmaskladen: Das modernste Geschäft der Welt." *Gasschutz und Luftschutz* (November 1931).

----------. "Die Glashäuser von Tempelhof." *Lichtbildbühne* 6, no. 24 (14 July 1913).

----------. "Mondgebirge in Neubabelsberg," *Film-Magazin* 16 (21 Apr. 1929).

----------. "Neues vom Film." *Berliner Illustrirte Zeitung* 35, no. 2 (10 Jan. 1926): 36.

----------. "Wie ein Film entsteht—III. Das Leben einer Dekoration," *Ufa Magazin* 2, no. 19 (6-12 May 1927).

----------. "Wie es echt wurde." *Ufa-Magazin* 2, no. 11 (11-17 Mar. 1927).

----------. "Wie sich der Film die Zukunft vorstellt,"*Berliner Illustrirte Zeitung* 36, no. 1 (2 Jan. 1927): 36-37.

Applegate, Celia. *A Nation of Provincials: The German Idea of Heimat*. Los Angeles: University of California Press, 1990.

Ascher, Louis. *Der Einfluss des Rauches auf die Atmungsorgane*. Stuttgart: Ferdinand Enke, 1905.

Asendorf, Christoph. *Ströme und Strahlen: Das langsame Verschwinden der Materie um 1900*. Giessen: Anabas Verlag, 1989.

Attanucci, Timothy. "Atmosphärische Stimmungen: Landschaft und Meteorologie bei Carus, Goethe, und Stifter," *Zeitschrift für Germanistik* 24, no. 2 (2014): 282-295.

Baer, Fritz. "Das Lichtbild und die Kunst." *Photographische Rundschau* 23, no. 13 (1909): 158-159.

Balázs, Béla. *Early Film Theory (Visible Man and The Spirit of Film)*, translated by Rodney Livingstone. New York: Berghan Books, 2010.

Bandelow, Wilhelm. "Das Handwerkzeug des Kunstphotographen." In *Camera-Kunst: eine internationale Sammlung von Kunst in der Neuzeit*, edited by Ernst Juhl. Berlin: Verlag Gustav Schmidt, 1903.

Banham, Reyner. *The Architecture of the Well-Tempered Environment.* Chicago: University of Chicago Press, 1984.

Barron, Stephanie (Ed.). *New Objectivity: Modern German Art in the Weimar Republic*. Los Angeles: LACMA, 2015.

Beckers, Maion and Elisabeth Moortgat (eds). *Else Thalemann: Industrie- und Pflanzenphotographien der 20er und 30er Jahre*. Berlin: Das Verborgene Museum, 1993.

Benjamin, Walter. *The Arcades Project*. Translated by Howard Eiland and Kevin McLaughlin. Cambridge, Mass.: Harvard University Press, 1999.

----------. *Das Passagen-Werk (Gesammelte Schriften V)*. Edited by Rolf Tiedemann. Frankfurt am Main: Suhrkamp, 1991.

----------. "Little History of Photography." *Selected Writings, Volume 2, Part 2: 1931-1934*, edited by Michael Jennings, Howard Eiland, and Gary Smith. Cambridge, Mass.: Belknap Press, 1999.

----------. "Kleine Geschichte der Fotografie." *Gesammelte Schriften II*, edited by Rolf Tiedemann and Hermann Schweppenhäuser. Frankfurt am Main: Suhrkamp, 1991.

----------. "To the Planetarium." *One-Way Street*. Translated by Edmund Jephcott. Cambridge, Mass.: Harvard University Press, 2016.

----------. "Zum Planetarium." *Einbahnstrasse*. Berlin: Ernst Rowohlt Verlag, 1928.

Bergdoll, Barry. "A Matter of Time: Architects and Photographers in Second Empire France." In *The Photographs of Edouard Baldus*, edited by Malcolm Daniel. New York: Metropolitan Museum of Art, 1994.

Bergfelder, Tim, Sue Harris, and Sarah Street. *Film Architecture and the Transnational Imagination: Set Design in 1930s European Cinema*. Amsterdam: Amsterdam University Press, 2007.

Berriatúa, Luciano. *Los Proverbios de F.W. Murnau*. Madrid: Filmoteca Española, 1990.

Blackbourn, David. *The Conquest of Nature: Water, Landscape, and the Making of Modern Germany*. New York: W.W. Norton & Company, 2007.

Bloch, Ernst. *The Principle of Hope, Volume 2*. Translated by Neville Plaice, Stephen Plaice, and Paul Knight. Cambridge, Mass.: MIT Press, 1995.

Böhme, Gernot. *The Aesthetics of Atmospheres: Ambiances, Atmospheres, and Sensory Experiences of Spaces.* Edited by Jean-Paul Thibaud. New York: Routledge, 2017.

----------. "Atmosphere as a Fundamental Concept of a New Aesthetics." *Theses Eleven* 36 (1993): 113-126.

Bölsche, Wilhelm. *Hinter der Weltstadt: Friedrichshagener Gedanken zur ästhetischen Kultur*. Leipzig: E. Diedrichs, 1901.

Born, Wolfgang. "Die Photographische Weltanschauung." In *Theorie der Fotographie II: 1912-1945*, edited by Wolfgang Kemp. Munich: Schirmer/Mosel, 1999.

Brüggemeier, Franz-Josef. "A Nature Fit for Industry: The Environmental History of the Ruhr Basin, 1840-1990." *Envrionmental History Review* 18, no. 1 (Spring 1994): 35-54.

Brüggemeier, Franz-Josef and Thomas Rommelspacher, *Blauer Himmel über der Ruhr: Geschichte der Umwelt in Ruhrgebiet*, *1840-1990*. Essen: Klartext, 1992.

Bunnell, Peter (Ed.). *A Photographic Vision: Pictorial Photography, 1889-1923.* Santa Barbara: P. Smith, 1980.

Busch, Werner. "Die Ordnung im Flüchtigen – Wolkenstudien der Goethezeit." In *Goethe und die Kunst*, edited by Sabine Schulze. Berlin: Hatje, 1994.

Carus, Carl Gustav. *Neun Briefe über Landschaftsmalerei*. Leipzig: Gerhard Fleischer, 1831.

Chessex, Robert. "Junto a F.W. Murnau en los estudios de la Ufa." In *Los Proverbios chinos de F.W. Murnau,* edited by Luciano Berriatúa. Madrid: Filmoteca Española, 1990.

Christian, Margareta Ingrid. "Aer, Aurae, Venti: Philology and Physiology in Aby Warburg's Dissertation on Botticelli." *PMLA* 129, no. 3 (2014): 399-416.

Christian, Margareta Ingrid. *Horror Vacui: A Cultural History of Air Around 1900*. PhD Dissertation: Princeton University, 2012.

Clark, T.J. "The Environs of Paris," *The Painting of Modern Life.* New York: Alfred A. Knopf, 1984.

Coen, Deborah. *Climate in Motion: Science, Empire, and the Problem of Scale*. Chicago: University of Chicago Press, 2018.

Colomina, Beatriz. *Publicity and Privacy: Modern Architecture as Mass Media*. Cambridge,

Mass.: MIT Press, 1994.

Connor, Steven. *The Matter of Air: The Science and Art of the Ethereal*. London: Reaktion Books, 2010.

Cowan, Michael. *The Cult of Will: Nervousness and German Modernity*. Philadelphia: Penn State University Press, 2008.

Dach, Erich F. "Kampf dem Asthma: Das Wesen der allergischen Krankheiten." *Die Koralle: Monatshefte für alle Freunde von Natur und Technik* 5, no. 1 (April 1929): 16-19.

Daguerre, Louis-Jacques-Mandé. "Daguerreotype." In *Classic Essays on Photography*, edited by Alan Trachtenberg. New Haven: Leete's Island Books, 1980.

Damisch, Hubert. *Theory of /Cloud/: Toward a History of Painting.* Stanford: Stanford University Press, 2002.

Daum, Patrick and Francis Ribemont (Eds.). *The Impressionist Camera: Pictorial Photography in Europe*. Saint Louis: Saint Louis Art Museum, 2006.

David, Ludwig. *Ratgeber im Photographieren: Leicht faßliches Lehrbuch für Amateurphotographen.* Halle: Verlag W. Knapp, 1910.

Demachy, Robert. "The Gum Print," *Camera Work* 7 (1904): 33-37.

Diesel, Eugen. *Das Werk: Technische Lichtbildstudien mit Vorbermerkung von Eugen Diesel*. Königstein im Taunus and Leipzig: Karl Robert Langewiesche, 1931.

Durham Peters, John. *The Marvelous Clouds: Towards a Philosophy of Elemental Media*. Chicago: University of Chicago Press, 2015.

Eastlake, Elizabeth Rigby. "Photography." *The London Quartlerly Review* 101 (April 1857): 442-468.

Edwards, Paul N. *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming*. Cambridge, Mass.: MIT Press, 2013.

Eisner, Lotte."Ein Wald wird unmontiert: Fritz Lang beginnt zu drehen." *Film-Kurier* (3 Oct. 1932).

----------. *Ich hatte einst ein schönes Vaterland.* Heidelberg: Wunderhorn, 1984.

----------. *The Haunted Screen: Expressionism in the German Cinema and the Influence of Max Reinhardt*, translated by Robert Greaves. Berkeley; Los Angeles: University of California Press, 2008.

Elsaesser, Thomas. *Weimar Cinema and After: Germany's Historical Imaginary*. London: Routledge, 2000.

Endell, August. *Die Schönheit der grossen Stadt.* Stuttgart: Strecker und Schröder, 1908.

----------. *Spaziergänge eines Naturbeobachters*. Berlin: Verlag der Gartenschönheit, 1928.

Evans, Richard. *Death in Hamburg: Society and Politics in the Cholera Years.* New York: Penguin, 2005.

Faber, Monika. *Heinrich Kühn: Die vollkommene Fotografie.* Berlin: Hatje Cantz Verlag, 2010.

Fay, Jennifer. *Inhospitable World: Cinema at the Time of the Anthropocene*. Oxford: Oxford University Press, 2018.

Fineman, Mia. *Faking It: Manipulated Photography Before Photoshop*. New York: Metropolitan Museum of Art, 2012.

Fleming, James Roger. *Inventing Atmospheric Science: Bjerknes, Rossby, Wexler, and the Foundations of Modern Meteorology.* Cambridge, MA: MIT University Press, 2016.

Fore, Devin. *Realism After Modernism: The Rehumanization of Art and Literature*. Cambridge, Mass.: MIT Press, 2012.

Forster-Hahn, Françoise (Ed.). *Imagining Modern German Culture, 1889-1910.* Washington, D.C.: National Gallery of Art, 1996.

Frank, Alison. "The Air Cure Town: Commodifying Mountain Air in Alpine Central Europe." *Central European History*, 45, no. 2 (June 2012): 185-207.

Friedman, Robert M. *Appropriating the Weather: Vilhelm Bjerknes and the Construction of a Modern Meteorology*. Cornell University Press, 1989.

Frizsche, Peter. "The Economy of Experience in Weimar Germany." *Weimar Publics/Weimar Subjects: Rethinking the Political Culture of Germany in the 1920s.* New York, Oxford: Berghain Books, 2010.

Frodl, Gerbert and Verena Traeger. *Stimmungsimpressionismus.* Vienna: Oesterreichische Galerie Belvedere, 2004.

Gad, Urban. *Der Film: seine Mittel—seine Ziele*. Berlin: Schuster & Loeffler, 1921.

Gernsheim, Helmut. *The History of Photography from the Earliest Use of the Camera Obscura in the Eleventh Century to 1914.* London: Thames & Hudson, 1969.

Gideon, Sigfried. *Building in France, Building in Iron, Building in Ferroconcrete*. Translated by J. Duncan Berry. Los Angeles: Getty Center for the History of Art, 1995.

Gilhaus, Ulrike. *Schmerzenskinder der Industrie: Umweltverschmutzung, Umweltpolitik und sozialer Protest im Industirezeitalter in Westfalen, 1845-1914*. Paderborn: Ferdinand Schöningh, 1995.

Goethe, Johann Wolfgang von. *Faust I & II*, edited and translated by Stuart Atkins. Princeton: Princeton University Press, 1984.

Grebe, Stefanie and Heinrich Theodor Grütter (Eds.). *Albert Renger-Patzsch: Die Ruhrgebietsfotografien*. Essen: Ruhr Museum, 2019.

Gropius, Walter. *The New Architecture and the Bauhaus*. Translated by P. Morton Shand. Cambridge, Mass.: MIT Press, 1965.

Gunning, Tom and Katharina Loew. "Lunar Longings and Rocket Fever." In *A Companion to Fritz Lang*, edited by Joe McElhaney. New York: Wiley & Sons, 2015.

Haas, Willy. "Wie ich Murnau kennengelernte." *Film-Kurier* (28 September 1925).

Hamann, Richard. *Der Impressionismus in Leben und Kunst*. Cologne: M. Dumont-Schaubergschen Buchhandlung, 1907.

Hansen, Fritz. "Wanderung durch Iphad." *Der Photograph* 37 (1909): 146

Harris, Chauncy D. "The Ruhr Goal-Mining District," *Geographical Review*, 36, no. 2 (April 1946): 194-221.

Hartmann, Sadakichi. "A Plea for Straight Photography." In *Photography: Essays and Images*, edited by Beaumont Newhall, 185-188. New York: MoMA, 1980.

----------. "The Solitary Horseman," *Camera Work* 7 (1904): 17-18.

Hau, Michael. *The Cult of Health and Beauty in Germany: A Social History, 1890-1930*. Chicago: University of Chicago Press, 2003.

Hauser, Heinrich. *Schwarzes Revier*. Berlin: S. Fischer Verlag, 1930

Heckert, Virginia. "Albert Renger-Patzsch: Contextualizing the Early Work, 1920-1933." PhD Dissertation, Columbia University, 2006.

Herkt, Günther. "Das großste Filmatelier Europas." *Reichsfilmblatt* 51 (22 Dec. 1926): 48.

Hellpach, Willy. *Die Geophysischen Erscheinungen: Wetter, Klima und Landschat in ihrem Einfluss auf das Seelenleben*. Leipzig: Wilhelm Engelmann, 1911.

----------. *Nervosität und Kultur*. Berlin: J. Räde, 1902.

Herbert, Robert. *Impressionism: Art, Leisure, and Parisian Society*. New Haven: Yale University Press, 1988.

Herlth, Robert. "Ezbosos de F.W. Murnau." In *Los Proverbios chinos de F.W. Murnau*, edited by Luciano Berriatúa. Madrid: Filmoteca Española, 1990.

----------. "With Murnau on the Set." In *Murnau*, edited by Lotte Eisner. Los Angeles: University of California Press, 1973.

Herlth, Robert and Walter Röhrig. "Der Dämon in dem Glashaus." *Ufa-Magazin* 9 (15-21 Oct. 1926).

Herth, Jeffrey. *Reactionary Modernism: Technology, Culture, and Politics in Weimar and the Third Reich* (Cambridge: Cambridge University Press, 1984.

Hilberseimer, Ludwig. "Das romantische Amerika," *Sozialistsche Monatshefte* 34, no. 6 (1928): 558.

----------. *Metropolis-Architecture*. Edited by Richard Anderson. New York: Columbia University GSAPP Sourcebooks, 2012.

Hoffmann, Carl. "Kleine Geheimnisse um den Faust-Film," *Film: Neues und Altes vom Kino* 10 (May/June 1981): 46-48.

Hoppé, Emil Otto. "Die bildmäßige Behandlungs Londons." *Deutscher Camera Almanach* 5 (1910): 15-20.

----------. "Die Romantik der Technik," *Wissen und Fortschritt* 2, no. 5 (1928): 135-138.

----------. "Einige Bemerkungen zur Landschaftsphotographie." *Deutscher Camera Almanach* 9 (1914): 113-120

----------. "Einige englische Kunstphotographen." *Die photographische Kunst im Jahre 1905* (Halle: Wilhelm Knapp 1905), 135-146.

----------. "Englische Lichtbildkunst 1905-06." *Die Photographische Kunst im Jahre 1906* (Halle: Wilhelm Knapp, 1906.

----------. "Englische Lichtbildkunst, 1910-11." *Die Photographische Kunst im Jahre 1911* (Halle: Photographisches Verlagsgesellschaft, 1911: 45-50.

----------. *Hundred Thousand Exposures: The Success of a Photographer*. London: The

Focal Press, 1946.

----------. “Kunstphotographisches aus England: Gedanken eines Unparteiischen.” *Die Photographische Kunst im Jahre 1908* (Halle: Wilhelm Knapp, 1908.

----------. “Poesie der Technik.” *Die Koralle* 3, no. 6 (Sept. 1927): 288-291.

----------. “Notes on Some Examples of the German Pictorial School.” *The Amateur Photographer* 47, no. 11 (February 1908): 131-135.

----------. “‘Royal’ und ‘Ring,’ die zwei grossen Londoner Herbstausstellungen.” *Photographische Mitteilungen* 43 (1906): 562-567.

----------. “Rudolf Dührkoop’s Aims & Methods in Photography.” *The Photographic Journal* 49, no. 2 (1908): 96-103.

----------. “Stahl und Dampf,” *Die Brücke: Werksnachrichten der Firma C.H. Jucho Dortmund* 4 (1928): 74-77.

----------. “Stahl und Dampf.” *Scherl’s Magazin* (March 1928): 258-261.

----------. “Stillstand oder Rückhang? Zur englischen Lichtbildnerei 1908-09.” *Die Photographische Kunst im Jahre 1909* (Halle: Wilhelm Knapp, 1909): 20-26.

Horn, Eva. “Air as Medium.” *Grey Room* 73 (Fall 2018): 6-25.

Howe, Graham. “E.O. Hoppé’s Pioneering Business Models in Photographic Practice,” *PhotoResearcher* 23 (2015): 52-65.

Huhtamo, Erki. “The Sky is (not) the Limit: Envisioning the Ultimate Public Media Display.” *Journal of Visual Culture* 8 (2009): 329-345.

Hutchinson, Elizabeth. “Conjuring in Fog: Eadweard Muybridge at Point Reyes.” In *Picturing*, edited by Rachael Z. DeLue. Chicago; Paris: Terra Foundation for American Art, 2016.

Jacobson, Brian. *Studios Before the System: Architecture, Technology, and the Emergence of Cinematic Space*. New York: Columbia University Press, 2015.

Jäger, Jens. “Amateurphotographen: Vereine und kunstphotographische Bewegung in Hamburg, 1890-1910.” In *Kunstphotographie um 1900: Die Ernst Juhl Sammlung*, edited by Rüdiger Joppien. Hamburg: Museum für Kunst und Gewerbe, 1989.

Jaeger, Roland. “Bleibende Dokumente des Neuen Sehens.” In *Autopsie: Deutschsprachige Fotobücher, 1918 bis 1945, Band 1*, edited by Manfred Hetting and Roland Jaeger. Göttingen: Steidl Verlag, 2012.

Jaeggi, Annemarie. “Fagus and Photography,” *Fagus: Industrial Culture from the Werkbund to the Bauhaus*. Princeton: Princeton Architectural Press, 2000.

Jenkins, Jennifer. *Provincial Modernity: Local Culture and Liberal Politics in Fin-de-Siecle Hamburg*. Ithaca: Cornell University Press, 2002.

Joppien, Rüdiger (Ed.), *Kunstphotographie um 1900: Die Ernst Juhl Sammlung.* Hamburg: Museum für Kunst und Gewerbe, 1989.

Joschke, Christian. *Les yeux de la nation: Photographie amateur et société dans l’Allemagne de Guillaume II*. Paris: Presses du réel, 2014.

----------. “La photographie, la ville et ses notables: Hamburg, 1893,” *Etudes photographiques* (November 2005): http://etudesphotographiques.revues.org/943.

Juhl, Ernst. “Die Abteilung für künstlerische Photographie,” *Photographische Rundschau* 10 (October 1896): 292-297.

----------. “Hauptmann Böhmer.” *Photographische Rundschau* (1901): 218-219.

Jünger, Ernst. *The Storm of Steel.* Translated by Michael Hoffmann. New York: Howard Fertig, 1996.

Kaes, Anton. “The Debate about Cinema: Charting a Controversy (1909-1929).” *New German Critique* 40 (Winter 1987): 7-33

Kay, Carolyn. *Art and the German Bourgeoisie: Alfred Lichtwark and Modern Painting in Hamburg, 1886-1914.* Toronto: University of Toronto Press, 2002.

Kaufhold, Enno. “Photographie und Malerei im Uebergang: Bildkultur in Hamburg vor der Jahrhundertwende.” In *Kunstphotographie um 1900: Die Sammlung Ernst Juhl*, edited by Rüdiger Joppien .Hamburg: Museum für Kunst und Gewerbe Hamburg, 1989.

Keller, Ulrich. “The Myth of Art Photography: An Iconographic Analysis.” *History of Photography* 9, no.1 (1985): 1-38

Kemp, Wolfgang. “Fotografie als Kunst.” In *Theorie der Fotografie I, 1839-1912*, edited by Wolfgang Kemp. Passau: Schirmer/Mosel, 1980.

----------. *Wir haben ja alle Deutschland nicht gekannt: Das Deutschlandbild der Deutschen in der Zeit der Weimarer Republik*. Heidelberg: Heidelberg University Publishing, 2016.

Kern, Josef. *Impressionismus im Wilhelminischen Deutschland: Studien zur Kunst- und Kulturgeschichte des Kaiserreichs*. Würzburg: Königshausen & Neumann, 1989.

Keultjes, Dagmar. "Let's Talk about the Weather: Negative Manipulation Techniques Used to Produce Atmosphere in Landscape Photography, 1850-1900." Lecture delivered at the "Inspirations—Interactions: Pictorialism Reconsidered" Symposium at the Kunstbibliothek, Berlin November 2013. Consultable at http://piktorialismus.smb.museum/index.php?page_id=2&lang=en.

Kister. "Bericht über die in Hamburg ausgeführten Rauch und Rußuntersuchungen." *Gesundheits-Ingenieu* 32, no. 51 (18 Dec. 1909): 841-851.

Kitzlinger, Christine. "Die Fotografien von Albert Renger-Patzsch in der Photothek der Zentralinstitut für Kunstgeschichte." In *Albert Renger-Patzsch: Architektur im Blick des Fotografen*. Munich: Zentralinstitut für Kunstgeschichte, 1997.

Klonk, Charlotte. *Spaces of Experience: Art Gallery Interiors from 1800 to 2000*. New Haven: Yale University Press, 2009.

Kossowsky, Alexander. "Das Filmgelände der Decla-Bioscop," *Film-Kurier* 227 (25 Sept. 1924).

----------. "Die Filmateliers der Ufa in Berlin-Tempelhof." *Film-Kurier* 239 (9 Oct. 1924).

Kracauer, Siegfried. "Calico-World." *The Mass Ornament: Weimar Essays*. Translated by Thomas Y. Levin. Cambridge, Mass.: Harvard University Press, 1995.

----------. *From Caligari to Hitler*. Princeton: Princeton University Press, 1947.

----------. "Kaliko-Welt: Die Ufa-Stadt zu Neubabelsberg." *Frankfurter Zeitung* 70, no. 72 (28 Jan. 1926), f. 1-2.

Kreimeier, Klaus. *The Ufa Story: A History of Germany's Greatest Film Company, 1918-1945*. Translated by Robert and Rita Kimber. New York: Hill and Wang, 1996.

Kuhn, Christine. *Kunstphotographie um 1900: Die Sammlung Fritz Matthies-Masuren.* Berlin: Staatliche Museen Berlin, 2003.

Kurtz, Rudolf. *Expressionism and Film*. Translated by Brenda Benthian. Herts: John Libbey Publishing, 2016.

Latour, Bruno. *Facing Gaia: Eight Lectures on the New Climatic Regime*. Cambridge: Polity Press, 2017.

Lekan, Thomas. *Imagining the Nation in Nature: Landscape Preservation and German Identity, 1885-1945.* Cambridge, MA: Harvard University Press, 2004.

Lekan, Thomas and Thomas Zeller (Eds.). *Germany's Nature: Cultural Landscapes and*

Environmental History. New Brunswick, NJ: Rutgers University Press, 2005.

Lethen, Helmut. *Cool Conduct: The Culture of Distance in Weimar Germany*. Los Angeles: University of California Press, 2002.

----------. *Neue Sachlichkeit, 1924-1932: Studien zur Literatur des "Weißen Sozialismus*. Stuttgart: Metzler, 1970.

Lichtwark, Alfred. "Der Amateur Photograph und die Natur." In *Das subjektive Bild: Texte zur Kunstphotographie um 1900*, edited by Bernd Stiegler and Felix Thürlemann. Paderborn: Wilhelm Fink, 2012.

----------. *Die Bedeutung der Amateur-Photographie*. Halle: W. Knapp, 1894.

Loescher, Fritz. "Die Entwicklung der künstlerische Photographie in Deutschland." In *Camera-Kunst: Eine internationale Sammlung von Kunst der Neuzeit*, edited by Ernst Juhl. Berlin: Verlag Gustav Schmidt, 1903.

Loew, Katharina. *Special Effects and German Silent Film*. Amsterdam: University of Amsterdam Press, 2021.

----------. "Techno-Romanticism: Special Effects in German Fantastic Films of the Silent Era." PhD Dissertation, University of Chicago, 2012.

Lotz, Wilhelm. "Architekturfotos," *Die Form* 4, no. 3 (1929): 69-72.

----------. "Fotobücher," *Die Form* 6, no. 1 (1931): 28-37.

Luke, Megan. "Artificial Blindness." In *Photography and Sculpture: The Art Object in Reproduction*, edited by Sarah Hamill and Megan Luke. Los Angeles: Getty Research Institute, 2017.

Maillet, Arnaud. *The Claude Glass: Use and Meaning of the Black Mirror in Western Art.* Cambridge, Mass.: Zone Books, 2004.

Mack, Max. *Die zappelnde Leinwand.* Berlin: Dr. Ensler & Co., 1916.

Mann, Thomas. *The Magic Mountain.* Translated by John E. Woods. New York: Vintage, 1996.

Mannoni, Laurent and Georges Didi-Huberman. *Les Mouvements de l'air: Etienne-Jules Marey, photographe des fluids*. Paris: Gallimard, 2004.

Marey, Etienne-Jules. "Les mouvements de l'air étudié par la chronophotographie." *La Nature* (7 Sept. 1901): 232-234.

Matthies-Masuren, Fritz. "Hugo Henneberg—Heinrich Kühn—Hans Watzek," *Camera Work* 13

(1906): 21-28.

----------. *Künstlerische Photographie*. Leipzig: Marquardt & Co., 1907.

----------. "Photographische Kunst im Jahre 1909," *Die Photographische Kunst im Jahre 1909* 8 (1909): 1-13.

----------. "Photographische Studienreise," *Photographische Centralblatt* 4, no. 9 (1898): 196.

----------. "Unsere Bilder." *Photographische Rundschau* (1909): 152.

----------. "Zu den Bildern," *Photographische Rundschau* 12 (1912): 114.

McCauley, Elizabeth Anne. *Clarence H. White and His World: The Art and Craft of Photography, 1895-1925*. New Haven: Yale University Press, 2017.

Michael-Bock, Hans and Michael Tötenberg (Eds.). *Das Ufa-Buch: Kunst und Krisen, Stars und Regisseure, Wirtschaft und Politik: Die international Geschichte von Deutschlands grössten Film-Konzern*. Frankfurt am Main: Zweitausendeins, 1992.

Miethe, Adolf. *Kunstlerische Landschaftsphotographie*. Halle: Wihelm Knapp, 1921.

Muhsam, Kurt. "Verrat filmischer Geheimnisse." *Tempo: Magazin für Fortschritt und Kultur* 1 (1927): 42-45.

Murata, Hanako. "Material Forms in Nature: The Photographs of Karl Blossfeldt." In *Object:Photo, 1909-1949*, edited by Mitra Abbaspour, Lee Ann Daffner, and Maria

Müller, Corinna. "Licht-Spiel-Räume." In *Babelsberg: Ein Filmstudio, 1912-1992*, edited by Wolfgang Jacobsen. Berlin: Stiftung Deutsche Kinemathek and Argon Verlag, 1992.

Muthesius, Hermann. "Wo Stehen Wir." *Jahresbericht des Deutschen Werkbundes* (1912): 11-26.

Nack, Erwin Wolfgang. "Naturgewahlten im Filmatelier," *Film und Volk* 2, no. 4 (May 1929): 7-8.

Nead, Lynda. *The Tiger in the Smoke: Art and Culture in Post-War Britain.* New Haven: Yale University Press, 2017.

Nye, David E. *The American Technological Sublime*. Cambridge, Mass.: MIT Press, 1994.

Oechslin, Werner and Gregor Harbusch (Eds.). *Siegfried Giedion und die Fotografie*. Zurich: gta Verlag, 2010.

Paret, Peter. *The Berlin Secession: Modernism and its Enemies in Imperial Germany.* Cambridge, Mass.: Harvard University Press, 1980.

Pfingsten, Claus. "Albert Renger-Patzsch: Early Industrial Photography." *History of Photography* 21, vol. 3 (Winter 1997): 187-191.

Pohlmann, Ulrich (Ed.). *Natur als Kunst: Landschaft im 19. Jahrhundert in Malerei und Fotografie*. Köln: Wienand, 2016.

Pollmann, Inga. *Cinematic Vitalism: Film Theory and the Question of Life*. Amsterdam: University of Amsterdam Press, 2018.

Peters, Ursula. *Stilgeschichte der Fotografie in Deutschland, 1839-1900.* Köln: DuMont Buchverlag, 1979.

Prodger, Philip. *E.O. Hoppé's America: Modernist Photographs from the 1920s*. New York: W.W. Norton and Company, 2007.

Prümm, Karl. "Empfindsame Reisen in die Filmstadt." In *Babelsberg: Ein Filmstudio, 1912-1992*, edited by Wolfgang Jacobsen. Berlin: Stiftung Deutsche Kinemathek and Argon Verlag, 1992.

Pudor, Heinrich. *Nackende Menschen: Jauchzen der Zukfunft.* Dresden: Verlag der Dresdner Wochenblätter, 1893.

Reich, Albert. *Leitfaden für die Rauch- und Rußfrage*. Munich and Berlin: R. Oldenbourg, 1917.

Renger-Patzsch, Albert. "Die Freude am Gegenstand," *Das Kunstblatt* 1 (1928): 19.

----------. "Ketzergedanken über künstlerische Photographie." In *Die Freude am Gegenstand: Gesammelte Aufsätze zur Photographie*, edited by Bernd Stiegler and Ann and Jürgen Wilde. Munich: Wilhelm Fink Verlag, 2010.

----------. "Masters of the Camera Report." In *Albert Renger-Patzsch: Photographer of Objectivity*, edited by Ann and Jurgen Wilde and Thomas Weski. Cambridge, Mass.: MIT Press, 1998.

----------. "Pflanzenaufnahmen (1926)." In *Die Freude am Gegenstand: Gesammelte Aufsätze zur Photographie*, edited by Bernd Stiegler and Ann and Jürgen Wilde. Munich: Wilhelm Fink Verlag, 2010.

----------. "Ueber das Photographieren von plastischen Kunstwerken (1925)." In *Die Freude am Gegenstand: Gesammelte Aufsätze zur Photographie*, edited by Bernd Stiegler and Ann and Jürgen Wilde. Munich: Wilhelm Fink Verlag, 2010.

----------. "Winterphotographie und Schneeschuhsport." In *Die Freude am*

Gegenstand: Gesammelte Aufsätze zur Photographie, edited by Bernd Stiegler and Ann and Jürgen Wilde. Munich: Wilhelm Fink Verlag, 2010.

----------. "Ziele." In *Die Freude am Gegenstand: Gesammelte Aufsätze zur Photographie*, edited by Bernd Stiegler and Ann and Jürgen Wilde. Munich: Wilhelm Fink Verlag, 2010.

Riegl, Alois. "Die Stimmung als Inhalt der modernen Kunst," *Die graphische Kunst* 22 (1899): 47-56.

----------. *Late Roman Art Industry*. Translated by Rolk Winkes. Rome: Giorgio Bretschneider Editore, 1985.

Robida, Albert. *Le Vingtième Siècle*. Paris: Georges Decaux, 1883.

Robinson, Henry Peach. *Letters on Landscape Photography*. London: Piper and Carter, 1888.

Rocco, Vanessa. "Pictorialism and Modernism at the Dresden Internationale Photographische Ausstellung." *History of Photography* 33, no. 4 (2009): 383-402.

Roh, Franz. "Mechanismus und Ausdruck: Wesen und Wert der Fotografie." *Foto-Auge*. Stuttgart: Akademischer Verlag Dr. Fritz Wedekind & Co., 1929.

Ruskin, John. "The Storm Cloud of the Nineteenth-Century." *John Ruskin: Selected Writings*, edited by Dinah Birch. Oxford: Oxford University Press, 2004.

----------. "The Pathetic Fallacy." *Modern Painters, Volume 3.* London: George Routledge & Sons Ltd., ND.

Sachsse, Rolf. "Made in Germany as Image in Photography and Design," *Journal of Popular Culture* 34, no. 3 (March 2004): 43-58.

Saunders, Tom. "Studioführungen nach Mass." In *Babelsberg: Ein Filmstudio, 1912-1992*, edited by Wolfgang Jacobsen. Berlin: Stiftung Deutsche Kinemathek and Argon Verlag, 1992.

Scheffler, Karl. *Die Architektur der Großstadt*. Berlin: Bruno Cassirer Verlag, 1913.

----------. *Der junge Tobias: Eine Jugend und ihre Umwelt*. Munich: Verlag Heinrich Ellermann, 1962.

Schivelbusch, Wolfgang. *The Railway Journey: The Industrialization of Time and Space in the Nineteenth-Century*. Berkeley; Los Angeles: University of California Press, 1986.

Schmidt, Schmidt. "Großstadt-Aufnahmen," *Photographische Rundschau* 64 (1927): 101-103.

Schmied, Wieland. *Neue Sachlichkeit and German Realism of the Twenties.* London: Arts Council of Great Britain, 1978.

Schuldenfrei, Robin. *Luxury and Modernism: Architecture and the Object in Germany, 1900-1933.* Princeton: Princeton University Press, 2018.

Schupp, Fritz. "Gestaltungsfragen beim Industriebau, erläutert am Bau von Kohlenwäschen." *Zentralblatt der Bauverwaltung*, 52-54 (December 1932): 638-643.

Schwartz, Frederic J. *The Werkbund: Design Theory and Mass Culture Before the First World War*. New Haven: Yale University Press, 1996.

Seeber, Guido. "Rauch und Nebel." *Filmtechnik* 4, no. 14 (1928): 262-263.

Sieker, Hugo. "Absolute Realism: On the Photographs of Albert Renger-Patzsch (1928)." In *Photography in the Modern Era: European Documents and Critical Writings, 1913-1940*, edited by Christopher Phillips, 110-115. New York: Metropolitan Museum of Art/Aperture, 1989.

Simmel, Georg. "The Philosophy of Landscape." *Theory, Culture & Society* 24 (2007): 20-29.

Shearer, J. Ronald. "Let's Talk About Efficiency: Politics and the Industrial Rationalization Movement in the Weimar Republic." *Central European History*, 28, no. 4 (1995): 483-506.

Sloterdijk, Peter. *Terror from the Air*, translated by Amy Patton and Steve Corcoran. Los Angeles: Semiotext(e), 2009.

Snyder, Joel. "Res Ipsa Loquitor." In *Things that Talk: Object Lessons from Art and Science*, edited by Lorraine Daston. Cambridge, Mass.: MIT Press, 2008.

Somaini, Antonio. "The Atmospheric Screen: Turner, Hazlitt, Ruskin." In *Screen Genealogies: From Optical Device to Environmental Media*, edited by Craig Buckley, Rüdiger Campe, Francesco Casetti. Amsterdam: Amsterdam University Press, 2019.

----------. "Walter Benjamin's Media Theory: The Medium and the Apparat." *Grey Room* 62 (Winter 2016): 6-41.

Spethmann, Hans. "Einleitung." *Der Gigant an der Ruhr*, edited by M.P. Block. Berlin: Albertus Verlag, 1928.

Spitzer, Leo. "Milieu and Ambience: An Essay in Historical Semantics." *Philosophy and Phenomenological Research* 3, no. 1 (Sept. 1942): 1-42.

Stamm, Rainer. *Der Folkwang-Verlag: Auf dem Weg zu einem imaginären Museum*. Frankfurt: Buchhändler-Verein, 1999.

Sternberger, Paul Spencer. *Between Amateur and Aesthete: The Legitimization of Photography as Art in America, 1880-1900*. Albuquerque: University of New Mexico Press, 2001.

Stetler, Pepper. "The Object, the Archive, and the Origins of Neue Sachlichkeit Photography." *History of Photography* 35, no. 3 (Summer 2011): 281-295.

Stieglitz, Alfred. "Pictorial Photography." In *Photography: Essays and Images*, edited by Beaumont Newhall. London: Seeker & Warburg, 1980.

Stokoe, Brian. "The Exemplary Career of E.O. Hoppé: Photography, Modernism, Modernity," *History of Photography* 38, no. 1 (2014): 73-93.

Stöneberg, Michael. *Arthur Köster: Architekturfotografie, 1926-1933: Das Bild vom Neuen Bauen*. Berlin: Gebrüder Mann, 2009.

Strauss, Phil. "Die Landschaft mit Wolken." *Deutscher Kamera Almanach* 18 (1929): 57-68.

Südendorf, Werner. "Kunstwelten und Lichtkünste." In *Babelsberg: Ein Filmstudio, 1912-1992*, edited by Wolfgang Jacobsen. Berlin: Stiftung Deutsche Kinemathek and Argon Verlag, 1992.

Tenfelde, Klaus (Ed.). *Bilder von Krupp: Fotografie und Geschichte im Industriezeitalter*. Munich: C.H. Beck, 1994.

Thompson, Peter. "Wardens of the Toxic Ward." *German Studies Review* 43, no. 2 (May 2020): 357-364.

Toepfer, Karl. *Empire of Ecstasy: Nudity and Movement in German Body Culture, 1910-1935*. Berkeley: University of California Press, 1997.

Tresch, John. *The Romantic Machine: Utopian Science and Technology after Napoleon*. Chicago: University of Chicago Press, 2012.

Treue, Johann Otto. "Die Retusche des himmels und das Eincopieren von Wolken." *Photographische Rundschau* 10, no. 2 (February 1896): 35-38.

Treuner, Hermann. "Die Geburtsstätte des Films." *Ufa-Magazin* 1, no. 8 (8-14 Oct. 1926).

Troy, Nancy. *The De Stijl Environment.* Cambridge, Mass.: MIT Press, 1983.

Uekötter, Frank. *Age of Smoke: Environmental Policy in Germany and the United States, 1880-1970.* Pittsburgh: Pittsburgh University Press, 2009.

Ullrich, Wolfgang. "Unschärfe, Antimodernismus und Avantgarde." In *Ordnungen der*

Sichtbarkeit: Fotografie in Wissenschaft, Kuns und Technologie, edited by Peter Geimer. Berlin: Suhrkamp, 2002.

Verne, Jules. "In the Year 2889." *Forum* (February 1889).

Villiers de l'Isle-Adam, August. "L'Affichage celeste." *Contes cruels*. Paris: Calmann Lévy, 1893.

Vogel, Hermann Wilhelm. "Ueber Landschaftsphotographie." *Photographische Mitteilungen* 4 (1866): 204-205.

Vogl, Joseph. "Wolkenbotschaft." *Archiv für Mediengeschichte* 5 (2005): 69-79.

Von der Osten, Gert. "Manets Spargelbündel 'bei Liebermann' jetzt in Köln: dem Andenken an Erwin Panofsky." *Wallraf-Richartz-Jahrbuch* 31 (1969): 135-148.

Von Grünburg, H. "Fotografieren durch Nebel." *Die Koralle: Monatshefte für alle Freunde von Natur und Technik* 6, no. 10 (January 1931): 473-476.

Ward, Janet. *Weimar Surfaces: Urban Visual Culture in 1920s Germany*. Berkeley; Los Angeles: University of California Press, 2001.

Wagner, Martin. *Das Wachsende Haus*. Berlin: Bong & Co., 1932.

Warschauer, Frank. "Asphaltgesicht." In *Um uns die Stadt,* edited by Robert Setiz and Heinz Zucker. Berlin: Sieben-Stäbe, 1931.

Warstat, Willi. "Die Photographische Staatssammlung zu Hamburg," *Photographische Rundschau* (1912): 43.

----------. "Die Schönheit der grossen Stadt als künstlerisches Problem für den Photographen." *Die photograpische Kunst im Jahre 1909* 8 (1909): 14-20.

Wegener, Paul. "Die künstlerischen Möglichkeiten des Films." In *Paul Wegener, sein Leben und seine Rollen: Ein Buch von ihm und über ihn*, edited by Kai Möller. Hamburg: Rowohlt, 1954.

Wellbery, David. "Stimmung." *New Formations* 93 (Summer 2018): 6-48.

Wichmann, Siegfried. *Realismus und Impressionismus in Deutschland: Bemerkungen zur Freilichtsmalerei des 19. Und beginnenden 20. Jahrhunderts*. Stuttgart: J.E. Schuler, 1964.

Wilde, Ann and Jürgen and Dieter Thoma. *Albert Renger-Patzsch: Ruhrgebiet-Landschaften, 1927-1935.* Cologne: DuMont Verlag, 1982.

Wilhelm-Kästner, Kurt. "Fotografie der Gegenwart: Grundsätzliches zur Ausstellung im

Museum Folkwang Essen." *Photographische Rundschau* 66 (1929): 93-94.

Witkovsky, Matthew. *Foto: Modernity in Central Europe, 1918-1945*. New York: Thames and Hudson, 2007.

Woker, Gertrud. "Gift-Gas: Die furchtbarste Waffe zukünftiger Kriege." *Die Koralle: Monatshefte für alle Freunde von Natur und Technik* 5, no. 10 (January 1930): 461-464.

Wölfflin, Heinrich. "Prolegomena to a Psychology of Architecture." In *Empathy, Form, and Space: Problems in German Aesthetics, 1873-1893*, edited and translated by Henry Francis Mallgrave and Eleftherios Ikonomou. Santa Monica: Getty Center for the History of Art and the Humanities, 1993.

Worringer, Wilhelm. *Abstraction and Empathy*. Translated by Michael Bullock. Chicago: Elephant Paperbacks, 1997.

Zervigón, Andrés Mario. "Rotogravure and the Modern Aesthetic of News Reporting." In *Getting the Picture: The Visual Culture of the News*, edited by Jason E. Hill and Vanessa R. Schwartz. New York: Bloomsbury, 2015.