

Could the history of Modern architecture be the history of photography? Architectural historians have become increasingly interested in such a proposition, examining the ways in which the two mediums were not only largely contemporaneous but also codependent. Most notable is Claire Zimmerman's theory of a «photographic architecture», a form of interrelated cultural production which includes buildings whose design and reception are informed by the logics and effects of photographs.¹ But what about photographs informed by the logics and effects of architecture? One way to explore the coaction of photography and architecture is to think materially, examining the metals, and their roles, in the common experience of architectural and photographic production. Extending that concern specifically into photographic output, I will analyze the photography of this materiality, paying special attention to one of its most robust areas of early activity in the *Ruhrgebiet*.

One material, iron, is a case in point. The tintype, as photographic substrate made of lacquered iron, was elemental to the popularization and mass dissemination of photography even if it was to be cellulose and nitrate that would ultimately take center stage. Architecture has, alternately, recognized iron's heroic guise as that of the essential component within steel and the structural frame made from it, launching as it did architectural modernism in the 19th century. The material basis of both mass photography and mass architecture was as much an intrinsic commonality as it was a generator of reciprocal representation, illustrating how Zimmerman's point could be described as symmetrical when thought of through the prism of materiality. Furthermore, photography also played an essential role in documenting and representing the swift advances in iron and steel technology in its early decades of mass production, namely the last three decades of the 19th century.

By the end of the 19th century, two corporations notably, Krupp and Thyssen, had diversified the uses of iron and steel construction to form two of the largest global companies. In particular, they staked the German Empire's claim as the powerhouse of a global steel culture at the advent of the 20th century. Ever cognizant of the importance of photography in documenting, promoting, and disseminating this power, Krupp and Thyssen presciently made efforts to formally document all nature of activities on their campuses in the *Ruhrgebiet*, from bird's eye views of facilities to action shots of production to formal portraits of their dynastic leadership and important visitors.² These highly choreographed images, which became essentially formulaic by the turn of the century, were widely disseminated in promotional materials, the press, and books. Behind these images, however, was another class of photos, images that were never meant to be seen by the public, documenting everything from metallurgical experiments to failed material trials to the ups

and downs of everyday work and social life. In this paper, I will examine this class of photographs, imbuing them with a certain polemical charge as I deploy the term «furtive photography», identifying them as, on the one hand, the underworld of a terrain of formal, outward oriented photography and, on the other, the visual and documentary basis on which a fuller reciprocity between physical construction and the construction of a body of photography.

A few conceptual vectors must first be charted. Central to my proposition here of a «furtive photography» is a conception of photography as an organizational medium, one that both adapts the subjecthood of Roland Barthes's well-worn conception of *punctum*, *studium* and *spectrum* to a corporate entity, and that also demonstrates the emergent psychology of the corporation in the time of its global ascendancy.³ That the corporation assumed way of behaving and affects akin to that of an individual, particularly those of secrecy and furtiveness, is at the center of recent scholarship on corporate conduct. The pervasiveness and culture of secrecy in organizational behavior went largely understudied until the publication of *Secrecy at Work: The Hidden Architecture of Organizational Life* by Jana Costas and Christopher Grey.⁴ Costas and Grey's central argument is that a culture of secrecy and furtiveness is less the product to conceal information than it is the result of habitual practices and social accomplishments that generate secrets. This cumulative culture of secrecy is distinct from other forms of concealment, including privacy, anonymity, taboos, and silence in that it is not unilaterally «good» (as in protecting trade secrets, intellectual property, rights and confidentiality) or «bad» (as in corruption and deception) but rather as a fluid manifestation of social relations unique to a corporation that build up between the networked actions of many individuals. This kind of secrecy is something the authors describe as «inside secrecy», a kind of secrecy that is at once shared between members of an organization and concealed, an elemental aspect in the very existence and practice that defined, and still defines, corporate culture in the modern world.

Unsure what the medium of photography could and could not do for the financial bottom line of business operations, corporations, as photographic archives like those of Krupp and Thyssen attest to, carefully selected images that they believed would enhance corporate identity or sell a product or both. Those left behind were constitutive, alternately, of a culture of omission and thus concealment, a form of «inside secrecy». This follows the basic logic of capitalism and is by no means revelatory. But the prosperous modern corporation, something Krupp modeled perhaps more than any other company in the world by the end of the 19th century, needed to have a unified message, and that applied to a broad definition of visual culture (which includes architecture) as much as anything else. The Krupp family and the company's upper management understood this imperative profoundly, something revealed in any number of archival documents that chronicle the need for a «message» and an «identity», as much a business idea as a visual one.⁵

A corporation is certainly not a singular person but could, as Costas and Grey demonstrate, produce the imperative for a singular strategy. Did the need for a unilateral «message», so to speak, a business dictum so essential to modern capitalism, render the corporation as something analogous to a singular subject? Could the strictures of corporate capitalism supercede the variegation of its individual players and become itself a kind of collective player? What does it mean if the corporation too can be the subjective arbiter of visual meaning?

It is worth bearing in mind that both Krupp and Thyssen, beginning in about the 1870s, had their own dedicated photographic studios on premises, with staff and state of the art equipment; they were bona fide image factories as much as they were factories of iron and steel. This might explain why certain images go underground or become furtive photographs. Their innate message is unpleasant, unuseful, undesirable, unappetizing; in this equation, these images will not sell products for any host of reasons. Capitalism has, in other words, monetized the range of the *punctum* of corporate imagery, filtering what reaches the consumer and what does not. How and why did these images become furtive?

Photomicrography

Krupp and Thyssen were early pioneers of what we would today recognize as the corporate research and development (R & D) armature.⁶ One of the central focuses of research at Krupp in its early decades was metallurgical science, research which sought to maximize the efficiency, and in the case of architectural steel, carrying capacity, of industrial metals. Although not formally attached to a university, Krupp and Thyssen nevertheless transformed the Ruhrgebiet into the global hub of metallurgical research (which included myriad treatises and publications) by the end of the 19th century.

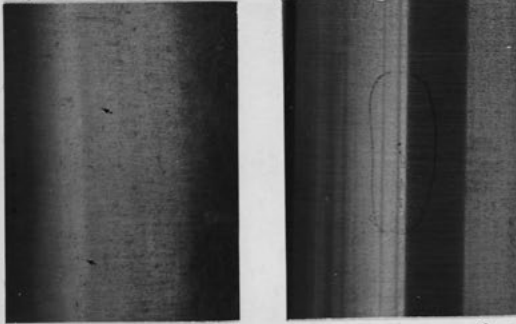
Studying the microscopic formation of iron, both as iron ore and as a refined metal, was one of the most urgent aspects of research and development in the steel industry.⁷ Photomicrography, photography taken through a microscope or similar device to show a magnified image of an item, had an important impact on both photography and the understanding of metals in architecture as it disavowed the idea that the naked eye alone could reveal the truth about the relative value of one specimen over another. Microscopes had, since the 1850s, begun to reveal structures and patterns in the organization of metals that could indicate their potential strength, longevity, and resistance against forces of deformation and corrosion. In Krupp's labs in Essen, sample specimens from different mines or specimens that had undergone different processes were collected and placed under an evolving array of microscopes with photographic armatures. These labs were in their own way pioneers in photomicrography, employing innovative equipment like the microscope oil lamp, and the apparatuses designed by other pioneers.⁸ In 1909 the Chemistry and Physics Experiment Office (which already had cranes and skylights to bring in large pieces for photographic documentation), added to its repertoire dedicated stations for both microscopy and photomicrography.⁹

The resulting photographs were often spectacular, revealing a world of novel forms, textures, and patterns. Once produced as prints, the images were hand-colored to simulate (and perhaps exaggerate) the colors seen under the microscope. They were then reproduced as chromolithographs and assembled into a dossier of sheets of similar images and kept almost entirely internally (fig. 1).

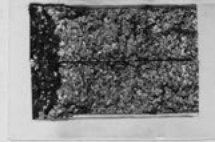
What photomicrography, in concert with chromolithography, did was to generate the imperative for a new type of visual literacy among its delimited, internal corporate audience. The metallurgists undoubtedly knew how to read these images and to understand what particular patterns meant but such was not necessarily the case for the non-scientific audience of the corporations' upper managements, including members of the Krupp and Thyssen families themselves. Such images were in many ways as much insider knowledge as they were (inside secrecy) and the

Rissiger Bohrkernabschnitt 40 m/m Ø
von Rotor 156690 aus E F 664 L(Ch.1 E M 4940) 148

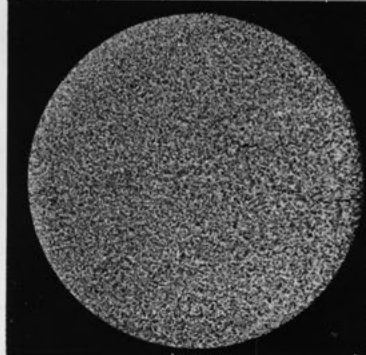
Oberflächen-Ansichten 47720
1.67919 2x 2.67910 2x



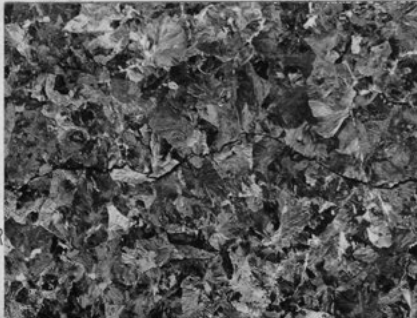
Aufgebrochener
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Querschliff, poliert 4.67479 2x
Querschliff, Aetzung:
Reagenz n. Oberhoffer 5.68489 2x



Querschliff, Aetzung: Pikrinsäure 6.67373 20x 7.67370 100x



1 Rissiger Bohrkernabschnitt 40 m/m Ø von Rotor 156690 aus E F 664 L (Ch.1 E M 4940), in: *Untersuchungsberichte Band II*, June 1929, Essen, Historisches Archiv Krupp

ability to read and interpret this new visual language translated into key corporate decisions about what iron ores to employ, what products to develop, and so forth. Produced and circulated internally, and necessitating fluency in a visual language, they epitomize the idea of the furtive photograph.

Failed Experiments

Another important genre of photographs in the Krupp archives is the documentation of material experiments and production processes. These photographs document any number of test processes: testing the weight limits of a given material, the extreme temperatures a material could withstand and numerous other examinations. The documentation of successful tests was often flouted in publicly circulated trade and scientific publications. The documentation of failed experiments, on the other hand, appears to have been much more numerous, and while they were often sent straight to an archival folder and kept under wraps, they were also well annotated and formatted, indicating a limited but attentive internal audience.

Another form of failure is the failure of the company in protecting its workers from bodily harm. It will likely come as no surprise that workers were often injured and maimed in the process of steel production. Numerous internal albums, never formally published, document workers' injuries in often excruciating detail. I would like, however, to look at a more complexly furtive set of images that were also exclusively for internal purposes, an album entitled *Schutzvorrichtungen* (safety provisions). It is not entirely clear how exactly this album was presented to its ostensible audience, the workers, but the purpose is clear: to demonstrate best practices for the dangerous work at hand. One photograph from the album, and another found elsewhere in the photographic archive, provide an important study in contrasts.

The first photo, which appears to be choreographed, shows two crucible carriers in the doorway of a melting shop, protected in the range of gear that was essential to their safety: goggles, aprons, spats and bags protecting their hands (fig. 2). The second photograph, which from its scratchiness and informality appears to be entirely candid, demonstrates how these practices were not always followed. Two workers, one of whom may even be seen in the previous photograph, are holding the crucible, this time at its real white heat. They are not, however, wearing their protective goggles, a lack of precaution that could lead to very serious damage of the eyes. What exactly this reveals about the ostensible precautions workers were supposed to take and those that they actually did is uncertain but the dissemination of the ideal image internally shows how images were meant to reinforce a



2 Crucible carriers at Krupp steel-works, from the series «Krupp Eisen und Stahl», c. 1903, colored photograph, Essen, Historisches Archiv Krupp

unilateral idea of decorum and behavior, a sort of visual set of rules that testify to the way in which the corporation, as a cumulative force, sought to deploy visual culture as the domain of unilateral meaning, both in public and in the furtive photograph.

Everyday Life

The third and final genre I wish to analyze are images of people and of everyday life. Importantly, I will exclude here, for example, the numerous family photographs of the Krupps themselves. While these were most certainly not meant for a mass audience, they were nevertheless made with the highest production value of their day, were rarely candid, and were lovingly bound into albums that were shared within the family, ostensibly separate from the corporation the family itself ran. Unstaged photographs of the everyday life of the workers are few and far between, partly because photographs that do exist are likely in private family collections and because photographic equipment would have been barely available to middle and lower wage workers during the company's early period. Yet a few such photographs have made it into the photographic archives, the very fact of which raises interesting and important questions about their provenance.

These photos are fundamentally different than those in the two previous categories. Whereas those photographs went underground because their content was discordant with a unilateral and outward corporate image, these images seem to have gone underground because they had no use value in public consumption, much the way our own personal photographs have no immediate value to capital markets. And yet they exist within the corporate archive, rendering them relevant to some internal corporate function, be it documentary, scientific or otherwise.

One of several themes which the archival researcher can pick up on is the role of women. It is well known that during wartime women assumed many of the manufacturing roles that were typically the province of men, men who were thrust upon the battlefields of World War I beginning in 1914. In formal photography, circulated in corporate materials, the roles and visual tropes for male workers had become well established by 1914. These male workers were typically placed in the center of the frame, their entire body visible while performing some act of difficult manual labor. These portraits were unabashedly heroicizing, invoking the taut poses of Greek statue while also harkening the glorification of common labor that had become a central theme in the romantic movement and 19th century painting. The fact that women supplanted men during wartime in these valorized visual roles posed a certain quandary for photographers. As this work was intended to be temporary, deployed as a stopgap solution, it would be indelicate to portray women in precisely the same light as men, risking the possibility of creating some sort of postwar parity between male and female labor.

But this was not to say that female labor was not depicted and disseminated. The formally circulated imagery of women at Krupp's facilities during wartime, for example, was used to mobilize the idea that the war effort was totalizing, both military and domestic, and as such, industrial labor had become not merely a form of personal valor but rather a form of national patriotism, a position which only enhanced the steel industry's widespread integration into postwar architectural practice. This deemphasized the individual and stressed the collective, a trend mirroring the corporate logic outlined by Costas and Grey. Numerous visual cues indicate how this was done. Rather than being placed centrally, alone and in their en-



3 Female workers on break, c. 1914–1918, photograph, Essen, Historisches Archiv Krupp

tirety within the picture frame, women were most commonly presented in groups, behind their machinery, with no discernible expression on their faces and with a greater sense of the industrial context.

This was not however, the entire story. In unreproduced imagery, we see views of women on their work breaks, laughing, socializing, drinking coffee (fig. 3). There is a particular intractable tension in these furtive images that make them incommensurate with the consolidated corporate image. For one, the activities of these women harken stereotypical signifiers of domesticity: social interaction, coffee pots and porcelain cups, and laughter. These images, at once cheery and incongruous, failed to serve the corporate narrative of wartime gravitas and the sober sacrifices of both men and women to commit themselves to work they did not themselves select.¹⁰

Into the Public Domain

The advent of World War I and then World War II coincided with a relative decline in photography on the campuses of virtually all industrial facilities, including Krupp, despite the dramatic increase in the production of steel goods.¹¹ There are likely many reasons for this, but first and foremost is the rise in the primacy of the military-industrial complex. The military-industrial complex necessitated a new structural secrecy (as opposed to corporate secrecy) in visual culture because images had the potential to reveal the state secrets embedded in manufacturing. Krupp, while not a state entity per se, was so intrinsically intertwined with the Kaiserreich, and later the National Socialists, that it understood this tacitly.¹²

This is precisely what made a wave of photojournalism of the Ruhrgebiet in the 1950s perhaps necessary and certainly exciting. After years of furtive photography or the abstention from photography altogether, photographers like Hans Rudolf Uthoff and Erich Lessing were given unfettered access to the mining and steel production sites that fueled much of the so-called *Wirtschaftswunder*, directing a gaze that was at once empathetic and critical of the men who toiled to transform the wellspring of German military (and architectural) might into the locus of peaceful reconstruction, shifting their focus from guns and tanks to the I-beams and trusses that would rebuild a broken nation. Uthoff and Lessing's work, often forgotten behind the more



4 Hans Rudolf Uthoff, *Self Portrait*, 1968, photograph

formally spectacular work of Bernd and Hilla Becher's images of industrial structures, indeed focused on the rough toll that the engine of industrial culture took upon those making it.¹³ Without the world wars, this tough side of industrial culture would have likely remained underground, and such images would have remained furtive and largely concealed. Uthoff went into the mines with workers, chronicling their triumphs and tragedies all while remaining staunchly in the narrative, as this proto-selfie of a sooty Uthoff reveals (fig. 4).¹⁴ Messing, wittingly or unwittingly, generated an array of haunting, intimate images of coal workers showering together after a long day in the mine, explicitly reversing the grimy motifs of Uthoff's photographs.¹⁵

That these images were made – and celebrated – in the public domain is a testament to the conciliatory dictums of the postwar order in the Federal Republic of Germany, one where guilt and reckoning promoted both a literal and figurative transparency across cultural lines. The new transparency of the postwar order mandated that these regimes of corporate visuality emerge from the vault and into the open light.

Endnotes

- 1 See Claire Zimmerman, *Photographic Architecture in the Twentieth Century*, Minneapolis 2014.
- 2 My research for this paper is based on photographic material in the archives of Krupp and Thyssen, in Essen and Duisburg respectively. On Krupp, Thyssen, corporate culture and photography see *The Letters of Alfred Krupp, 1826–1887*, ed. by Wilhelm Berdrow, London 1930; Cedric Bolz, Constructing «Heimat» in the Ruhr Valley: Krupp Housing and the Search for the Ideal German Home 1914–1931, in: *German Studies Review*, 2011, Vol. 34, Nr. 1, pp. 17–43; Michael Epkenhans, *Friedrich Alfred Krupp. Ein Unternehmer im Kaiserreich*, München 2010; Jeffrey Fear, *Organizing Control: August Thyssen and the Construction of German Corporate Management*, Cambridge/Massachusetts 2005; Gusstahlfabrik Friedrich Krupp, *Krupp. A Century's History of the Krupp Works, 1812–1912*, Essen 1912; Michael Honhart, Company Housing as Urban Planning in Germany, 1870–1940, in: *Central European History*, 1990, Vol. 23, Nr. 1, pp. 3–21; Harold James, *Krupp: Deutsche Legende und globales Unternehmen. Aus dem Englischen von Karl-Heinz Siber*, München 2011; Alf Lütke, Writing Time – Using Space. The Notebook of a Worker at Krupp's Steel Mill and Manufacturing – an Example from the 1920s, in: *Historical Social Research/Historische Sozialforschung*, 2013, Vol. 38, Nr. 3, pp. 216–228; William Manchester, *The Arms of Krupp, 1587–1968*, Boston 1968; Klaus Tenfelde, *Pictures of Krupp: Photography and History in the Industrial Age*, London 2006; Fahri Türk, Deutsche Siedlungspläne im Osmanischen Reich, in: *German Studies Review*, 2010, Vol. 33, Nr. 3, pp. 641–656. On Thyssen see Manfred Rasch, The Internationalization of the Thyssen Group before the First World War, in: *The Transformation of the World Steel Industry from the XXth Century to the Present*, ed. by Charles Barthel/Ivan Kharaba/Philippe Mioche, Brussels 2014, pp. 72–91.
- 3 Roland Barthes, *Camera Lucida*, New York 1981.
- 4 Jana Costas/Christopher Grey, *Secrecy at Work: The Hidden Architecture of Organizational Life*, Palo Alto 2016.
- 5 See James 2011 (as note 2), particularly pp. 55–65.
- 6 Research was published in the *Technische Mitteilungen Krupp*. See also James 2011 (as note 2), p. 49.
- 7 Regarding the history of photomicrography see Brian Bracegirdle, *A History of Photography with the Light Microscope*, London 2010.
- 8 Ibid.
- 9 Tenfelde 2006 (as note 2), p. 315.
- 10 See Franz W. Seidler, *Frauen zu den Waffen. Marketenderinnen, Helferinnen, Soldatinnen*, Koblenz 1978.
- 11 This is gleaned entirely from the amount of photographic holdings relative to industrial productivity and employment numbers.
- 12 See Robert B. Armeson, *Total Warfare and Compulsory Labor: A Study of the Military-Industrial Complex in Germany During World War I*, Berlin 1964.
- 13 There is a great deal of history and criticism written on the Bechers. Specific to their place in the field of architectural history and the Federal Republic of Germany see Kathleen James-Chakraborty, *Modernism as Memory: Building Identity in the Federal Republic of Germany*, Minneapolis 2017, pp. 185–212.
- 14 See Hans Rudolf Uthoff, *Tief im Westen. Das Ruhrgebiet 1950 bis 1969 im Bild*, Essen 2010.
- 15 See more on Lessing here: Lessing photo archive, website, <http://www.lessingimages.com/content.asp?c=biography>, accessed June 13, 2018.