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Side by Side: The Halftone’s Visual Culture of Pragmatism

Sarah Mirseyedi

Charles S. Peirce’s late-nineteenth-century semiotic theory has long been considered one of the key frameworks for analysing the photograph as a visual sign. This article, however, proposes a closer look at Peirce’s contemporaneous philosophy of pragmatism as a fundamental component of the visual, cultural, and intellectual context within which the photographic halftone first emerged. When, exactly, did it begin to matter if a photographic image made up of a certain arrangement of graphic marks was read differently from a photographic image made up of a different arrangement of graphic marks? Such pragmatist questions were crucial to the early reception of halftone reproductions, which were often integrated into illustrated magazines as simply one element within an already diverse array of graphic codes. Turning to Jacob Riis’s *How the Other Half Lives* (1890) as a case study, this article argues that reading the halftone as a chiefly photographic sign was not in fact an inevitable outcome of its introduction into the illustrated press in the 1880s and 1890s, but instead required a constant negotiation of both visual and conceptual imprecision – an imprecision eventually smoothed over in favour of an association of halftone technology with photographic ontology by the early twentieth century.

**Keywords:** Charles S. Peirce (1839–1914), Jacob Riis (1849–1914), pragmatism, photomechanical reproduction, halftone reproduction, newspaper illustration, magazine illustration, mass media, popular culture

Two photographs appear side by side in the 28 August 1886 issue of *Harper’s Weekly* – or, rather, two ‘photographed’ images appear there, as we are told by way of captions beneath each image (figure 1). The captions unite the two images in a shared origin story, located however tenuously in the medium of photography. But in many other ways, these two images are as different from one another as they are from a photograph. In the illustration at the top, we find what appears to be a freehand drawing, reproduced most likely by the line-block process, while the illustration below features a tight network of mechanically spaced lines, a sign of the highly controlled aesthetic of the wood engraving. The visual character of the scenes depicted in each illustration is likewise as different as the print processes used to create them: in one, we find the very image of stillness in the form of a commemorative statue; in the other, a city parade, bustling with activity and crowds of people, rendered in minuscule and painstaking detail. If ‘photography’, as either name or idea, could float rather nebulously across images as different as these, then what, if anything, could a viewer demand from ‘photography’ within the pages of the illustrated journal or magazine during this period of time?¹

Fast forward to a March 1906 issue of the same magazine – a very different image appears there, and a very different kind of language (figure 2). The caption speaks not of a ‘photographed’ image, but of an event – a ‘photographing’. The immediacy of such language extends to the visual character of the scene we see in print. A man leaps

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¹ – Geoffrey Belknap’s recent work on the function of ‘photography’ as a discursive label within the scientific press of the late nineteenth century offers a particularly cogent and well-researched model for my attempts to answer this question in this article. See Geoffrey Belknap, *From a Photograph: Authenticity, Science and the Periodical Press, 1870–1890*, London: Bloomsbury Academic 2016.
dramatically up onto a fence; the bison, with slightly blurred head, appears ready to charge. It becomes undeniably clear, in a way it was not in 1886, that we are looking at a photograph — or rather, at a photographic halftone, one of the most complex technological advancements in the reproduction of photographs of the late nineteenth century.

What separates the 1886 from the 1906 Harper’s Weekly illustrations, however, is not simply a matter of technological innovation, although that may indeed be the most obvious shift to have taken place. The two intervening decades witnessed both the invention of the screened halftone process as well as its widespread popularisation as a viable commercial method for illustrating newspapers, journals, and magazines. From the 1870s to the 1880s, numerous patents were filed in both Europe and the USA for processes that introduced the use of a screen into what were otherwise fairly standard procedures of photoengraving. The screen, usually a glass plate etched with a grid of intersecting lines, worked as an optical device when

Figure 1. Unknown engravers, The Statue of Baron De Kalb at Annapolis, Maryland. Photographed by Bachbach & Brother, Baltimore, line block; and Parade of the Grand Army of the Republic in San Francisco, August 3 — Photographed by Taber, wood engraving, ca. 1886. From Harper’s Weekly (28 August 1886), 549. Widener Library, Harvard University.

placed in front of a negative, diffracting the incoming light through tiny apertures to result in discrete areas of exposure upon a photosensitive surface. This discretisation at the heart of the halftone process was borne of an urgent need for a relief surface for printing, one that would be both typographically compatible and involve fewer intervening artistic hands than either the wood engraving or the line-block process had required. What was less urgent, however, was the halftone’s exclusively photographic identity. As we have seen in the 1886 Harper’s Weekly images, wood engravings and line-blocks could easily fill the demand for ‘photographed’ images, however blatantly unphotographic they appear to us today.

Something else had changed between 1886 and 1906, and between the ‘photographed’ and the ‘photographing’ captions to be found in the respective issues of Harper’s Weekly. In a matter of decades, a certain idea of photography had become attached to the halftone reproduction, where only a few years earlier the language of photography had floated free of such strict allegiances within the pages of the illustrated press. That idea of photography was tied to a view we are perhaps more familiar with today: the photograph as the ultimate sign of the here and now, of immediacy and presence, and of the evidentiary, indexical trace. Much like the halftone itself, this particular usage of the term ‘index’ was also a late-nineteenth-century invention. Writing at the very moment of the halftone’s upswing in popularity, Charles Sanders Peirce had famously described in 1894: ‘Photographs, especially instantaneous photographs, are very instructive because we know that they are in certain respects exactly like the objects they represent. But this resemblance is due to the photographs having been produced under such

Figure 2. Ernest Harold Baynes (photographer), An Exhilarating Incident during the Photographing of an Unwilling Cow Bison, halftone, ca. 1906. From Harper’s Weekly (24 March 1906), 405. Widener Library, Harvard University.

3 – Taft makes a similar point that the demand for a type-compatible printing matrix drove innovation at least as much, if not more than, the demand for a recognisably photographic image during this period of time: ‘It is evident that the problem before the student of photoengraving in the days preceding the half-tone, at least as far as the illustrated press was concerned, was to secure not only a photomechanical method of reproducing the intermediate tones of the copy, whether the copy were photograph, drawing, or painting, but to secure a printing block that could be used in the same press and on the same paper as type, and, when necessary, with type’. Taft, ‘Photography and the Pictorial Press’, 435.
certain circumstances that they were physically forced to correspond point by point to nature. Point by point: could Peirce possibly have been thinking about the halftone reproduction when writing in 1894? While admittedly unlikely, the historical congruity remains striking, and paying attention to such congruity, I contend, allows us to revisit the halftone’s relationship to photographic semiology in new ways. With its tell-tale visual appearance as an array of discrete points, each corresponding in neat, indexical fashion to the amount of light projected from distinct areas of a photographic negative, the halftone reproduction might seem to us today downrightconsistent in its claim to a distinctly photographic identity. This article, however, seeks to open up and interrogate that claim by returning to the early days of the halftone – a moment in time when it was not at all clear how exactly a halftone should behave, or indeed how its viewers should behave when confronting it, whether as visual image or technical object.

The legacy of Peirce’s writings on semiotics for the history of photography has been a famously contentious one. Within his tripartite scheme of icon, index, and symbol, photography seems often to exist somewhere at the messy boundary between the icon and index – that is, between a sign that operates through visual resemblance to its referent and a sign that operates by way of direct effect or physical trace from its referent. The tendency in scholarship on photography has been, however, to single out the index as its defining semiotic feature, the thing that makes it different from all other visual signs. Over the course of the twentieth century, this fixation on Peirce’s notion of the index seems in retrospect to have caused more confusion than clarity, with the continued usefulness of his semiotic classifications having been thrown into doubt.

If the moment of Peirce’s philosophical usefulness has indeed been exhausted, however, his usefulness as an historical actor, contemporaneous with momentous shifts in the technology and practice of photography, is perhaps as pertinent as ever. Recent scholarship by François Brunet, for instance, has sought to situate Peirce within both broader historical contexts and the terms of his own biography, taking into account Peirce’s own experience with scientific applications of photography early in his career. Understanding Peirce as an historical actor with his own specific relationship to the evolution of photographic practices helps to contextualise his semiotic theories more carefully than they have otherwise been in the past.

As Brunet has argued, Pierce called upon the example of the photograph in his writing not so much to clarify photography’s unique semiotic structures, but because ‘photography’ had become by the end of the century an obvious and stable concept on which to rely: ‘This discourse was, around 1900, universally accepted: photographs were read as photographs because everyone knew, at least roughly, about their mode of production – which in itself was unambiguous’. Within Brunet’s narrative, it is primarily the Kodak hand camera, introduced in 1888, that serves as the central catalyst for this late-nineteenth-century association of photography with simplicity, singularity, and coherence.

But what about the halftone reproduction? As one historian of the halftone has noted, ‘It is one of those curious historical coincidences that George Eastman unveiled the first Kodak camera to the world in the same year that Frederic Ives announced the invention of the cross line halftone screen’. The influence of the halftone reproduction on late-nineteenth-century discourses of photography thus cannot be separated from the much longer spectrum of photographic practices it was forced to define itself against, which included not only the populist discourses of the Kodak but also the aesthetic discourses of Pictorialism, which had come into its own as both movement and style by the turn of the century. During this period of time, popular photography, mass photography, and art photography existed simultaneously as separate yet interwoven fields, each being invoked with increasing frequency with regard to the others. The halftone, I will argue, quickly came to play a crucial role in this process, operating in many instances as the central node around which other forms of photographic expression had to orient themselves.

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Already by 1899 we find evidence of such attempts at orientation. In that year, the Pictorialist photographer Alfred Horsley Hinton published an argument in the photomechanical trade journal *Penrose's Process Year Book* for a deep relationship between the halftone and Pictorialism. In his attempt to account for the rising public taste for Pictorialist photography over the previous decade, Hinton suggests one look no further than the halftone for an explanation, making his case for a serious consideration of 'what part the multiplication of half-tone reproductions has played in this modification of taste'. He finds a direct parallel between the unique visual character of the halftone reproduction and the novel aesthetic effects being pursued by Pictorialist photographers:

Those features which chiefly distinguish the neo-photograph from its more prosaic predecessor are also essentially the qualities inseparable from the halftone reproduction, namely, a slight lowering of highlights, due to the screen, and a consequent shortening of the scale of gradations; also a breaking up of sharp outlines and some detail, due also to the screen; whilst, except in luxurious editions, the print is of the dead or matt surface.9

The pursuit of hazy, aesthetic effects in the field of photography was, of course, nothing new, but by the 1890s something about the halftone had certainly made it seem so. In Hinton's view, the halftone and the Pictorialist print had come to seem like mutually constitutive aesthetic objects, the one cementing the popularity of the other and vice versa through parallel transformations of public expectation. Such transformations, of course, were not always welcome, as they seemed to throw into question the continued applicability of the single term 'photography' to otherwise vastly different modes of practice. Thus, in 1904, we find Sadakichi Hartmann asking of Pictorialism: 'What sort of photography is it? How is it made? Why does this part look like a hand painted monotype, and that one like an etching or a charcoal drawing? Is it still photography, or is it merely an imitation of something else?10

As the Kodak entered the scene, it, too, had to contend with the growing ubiquity of the halftone reproduction and its influence upon public taste. The halftone's introduction into the mass press seemed increasingly to threaten to overwrite all other forms of photographic practice. Advertisements for the Eastman Kodak Company specifically avoided using halftone reproductions to stand in for Kodak prints, hoping to maintain the status of their product as a unique kind of photographic image.11 Such precautions were perhaps warranted. Reviewers of Jacob Riis's 1890 publication *How the Other Half Lives*, one of the first books published with halftone reproductions, conflated quite easily what they saw in Riis's book with connotations of the Kodak, even if still unsure of the merit of either innovation. As one contemporary reviewer put it, 'while there is not much to be said for [the photographs'] artistic merit, there is something very unusual, not to say interesting, in looking in at midnight with the unerring eye of the "Kodak"'.12

The ambiguous semiotic status of the halftone within illustrated media allowed for such conflations, a topic to which I will return in the final section of this article through a case study on Jacob Riis.

In the meantime, I will explore the ways in which the halftone represented a critical intervention into the landscape of visual culture in the last decades of the nineteenth century, one that was able to reveal, through the unique semiotic and technical challenges it posed, the necessity of a conceptually coherent account of photography in the face of its absence. The question of conceptual coherence and how to arrive at it, however, was not the subject of Peirce's semiotics. It was a line of thought belonging instead to his philosophy of pragmatism, articulated for the first time through a series of articles written for the journal *Popular Science Monthly* in the 1870s. It is there, perhaps, that we might find the logical antecedent to the strange spectre of 'collateral knowledge' (sometimes also called 'pragmatic knowledge') through which the idea of photography was able to operate in Peirce's semiotics.13 Pragmatism, especially in the idiosyncratic way in which Peirce first


11 – Phillips, 'Art for Industry's Sake', 34.


13 – Brunet, 'A Better Example', 36.
articulated it in these early essays, paradoxically situates the pursuit of knowledge and truth in the domain of subjective experience and at the same time seriously questions the degree of logical clarity any individual person is capable of bringing to those experiences.

This article takes seriously the historical contemporaneity, spanning roughly the period of time from 1870 to 1910, of Peirce’s introduction of his doctrine of pragmatism, his writing on semiotics, and the rise of halftone technology. Returning to the early moments of the emergence and initial application of halftone technology to the reproduction of photographs allows us to reassess the role this new kind of image played in fostering what I will call a visual culture of pragmatism, understood in this instance as an historically specific mode of viewing inaugurated by the juxtaposition of the photographic halftone side by side with earlier processes of illustration and image reproduction such as the wood engraving and the line-block. Within this context, viewers were asked not only to confront the halftone image alongside other kinds of illustration but also alongside the very idea of photography itself. While a certain desire for a clear and unified concept of photography had in many ways always been a crucial feature of its history and discourse throughout the nineteenth century, I will argue that the simultaneous challenge and promise of the halftone reproduction made especially clear a growing need for conceptual unity by the turn of the century.\(^\text{14}\) As we shall see, Peirce’s specific presentation of the philosophy of pragmatism in 1878, both more rigidly technical and more visual than discussions of pragmatism that would follow in the twentieth century, offers a compelling analogy for the new kind of viewing demanded by the halftone at the moment of its introduction into US visual culture.

_Peirce, Pragmatism, and the Dot Diagram of 1878_

In an 1878 article in _Popular Science Monthly_ entitled ‘How to Make Our Ideas Clear’, the philosopher and logician Charles Sanders Peirce included a minimalist diagram in which two arrangements of dots in a grid-like structure appear side by side (figure 3). The only difference between the two is that the arrangement on the right has been tilted 45 degrees to create the appearance of a different arrangement. As Peirce describes:

> Imaginary distinctions are often drawn between beliefs which differ only in their mode of expression; – the wrangling which ensues is real enough, however. To believe that objects are arranged as in Fig. 1, and to believe that they are arranged in Fig. 2, are one and the same belief; yet it is conceivable that a man should assert one proposition and deny the other.\(^\text{15}\)

This diagram belongs to a series of articles, titled ‘Illustrations in the Logic of Science’, in which Peirce explored many of the tenets of what would later come to be called pragmatism. For Peirce writing in 1878, however, this particular line of thinking was not yet widely subsumed under this banner. It would not be until an 1898 lecture that William James would single out the doctrine first articulated in ‘How to Make Our Ideas Clear’ for its concise articulation of a pragmatist method of inquiry, which read: ‘Consider what effects, which might conceivably have practical bearings, we conceive the object of our conception to have. Then, our conception of these effects is the whole of our conception of the object’.\(^\text{16}\) This effects-oriented approach sought to reorient the pursuit of knowledge away from the realm of a-priori reasoning by instead filtering such questions through practical effects and personal behaviour.

The introduction of relativism, contingency, and subjective experience in place of absolute truth has become one of the most lasting legacies of American Pragmatism from this period of time. While later pragmatists sought to open up

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14. Here again, François Brunet’s scholarship serves as an important precedent and model for my own thinking about photography as an idea or concept with historically specific roots. See François Brunet, _La naissance de l’idée de photographie_, Paris: Presses universitaires de France 2000, 15-23.


16. Ibid., 293.
produced by our own unclarness of thought for a character of the object we are thinking. Instead of perceiving that the obscurity is purely subjective, we fancy that we contemplate a quality of the object which is essentially mysterious; and if our conception be afterward presented to us in a clear form we do not recognize it as the same, owing to the absence of the feeling of unintelligibility. So long as this deception lasts, it obviously puts an impassable barrier in the way of perspicuous thinking; so that it equally interests the opponents of rational thought to perpetuate it, and its adherents to guard against it.

Another such deception is to mistake a mere difference in the grammatical construction of two words for a distinction between the ideas they express. In this pedantic age, when the general mob of writers attend so much more to words than to things, this error is common enough. When I just said that thought is an action, and that it consists in a relation, although a person performs an action but not a relation, which can only be the result of an action, yet there was no inconsistency in what I said, but only a grammatical vagueness.

From all these sophisms we shall be perfectly safe so long as we reflect that the whole function of thought is to produce habits of action; and that whatever there is connected with a thought, but irrelevant to its purpose, is an accretion to it, but no part of it. If there be a unity among our sensations which has no reference to how we shall act on a given occasion, as when we listen to a piece of music, why we do not call that thinking. To develop its meaning, we have, therefore, simply to determine what habits it produces, for what a thing means is simply what habits it involves. Now, the identity of a habit depends on how it might lead us to act, not merely under such circumstances as are likely to arise, but under such as might possibly
With this diagram, Peirce asks his readers to see a subtle shift in an array of dots as a manipulation not of the nature of truth but simply of its ‘mode of expression’, signalling perhaps his later concern with modes of signification in his semiotic theory. But unlike Peirce’s famously intricate system of signs, the dot diagram instead offers a lesson in how to avoid unnecessary attention to detail, favouring an approach that cuts across specificity in its pursuit of logical clarity. As such, the diagram’s structure is almost deceptively simple. The slight shift in the orientation of the second array of dots is designed to be written off as superficial, even as our attention is undeniably drawn towards it as a sign of real difference. In this sense, the diagram remains stubbornly visual and technical – it makes plain the real sensation of visual discrepancy at the same time as its function in the text is meant to deny such discrepancy as a useful criterion in the judgment of conceptual clarity.

Even as the text asks its readers to make the crucial logical leap of seeing past a concept’s mere ‘mode of expression’ in favour of the idea that stands behind it, the diagram that illustrates this point remains stubbornly disjointed, its own visual logic having not yet caught up with the point its author wants to make. Indeed, the diagram almost seems to be missing a step: that moment when the array of dots on the left rights itself, reversing the 45-degree angle shift it has undergone, to merge at last with the array of dots on its right, the two having been in fact the same the whole time. Such a manoeuvre, however, must necessarily remain an imaginary one. The disjointed, side-by-side structure is precisely what makes the diagram a necessary intervention, performing a suspension of the mental processes of logic in a way Peirce’s text cannot. The mental operation of placing two things side by side is precisely what distinguishes Peirce’s pragmatism from other philosophical discourses concerned with the role of subjective experience in the pursuit of knowledge and truth. Pragmatism acknowledges confusion as a real feature of experience – ‘the wrangling which ensues is real enough’, Peirce admits. The pragmatic subject is asked not to extinguish confusion, but simply to act within it. That action then serves as the sole measure of clarification.

In this way, Peirce’s diagram makes a case for a radical reorientation of one’s response to visual inconsistency – a problem of increasing importance to the reception of halftone reproductions of photography in the late nineteenth century. While the halftone was not yet a viable technology for photographic reproduction by the time Peirce was discussing dots in 1878, we can nevertheless find in this example a compelling analogy for the ‘wrangling’ that accompanied the emergence of the halftone image in the 1880s. Despite the very real visual differences that existed, on the one hand, between the halftone as an array of discrete dots printed in ink and the chemically printed photographic image, and, on the other, between the halftone and the wood-engraved newspaper illustration it most often appeared alongside, viewers of halftone reproductions had to decide for themselves whether to act as if those differences were superficial or meaningful. As in the case of Peirce’s dot diagram, this real sensation of visual discrepancy was often at cross-purposes with the larger issue at hand – the status of photography’s conceptual unity and the place of the mass-produced halftone within that concept.

Unlike previous nineteenth-century methods of photomechanical reproduction, the screened halftone process was the first that produced an image matrix made up of a regularised grid of dots as opposed to the randomised, reticulated grain typical of photogravure, a process similar to the intaglio process of aquatint in its distinctive, granular texture. With the introduction of the cross-line screen, the discretisation of the continuous photographic image was no longer an accidental effect of materials, but a technological desideratum – something sought after rather than stumbled upon. Still, halftone producers often sought methods to avoid the undesirable appearance of the dot structure. As in the dot diagram, a 45-degree angle shift in orientation of two overlapping screens was in fact one of the crucial technological manipulations that allowed for the dot matrix of the halftone to appear least obvious to the eye, allowing for its acceptance as a convincing
reproduction of the continuous tones of a photographic image. Prior to finding such technical solutions, however, the experience of looking at a halftone reproduction could often seem like an exercise in the management of visual discrepancy. While certain superficial manipulations to the shape and orientation of the screen could help minimise the appearance of the technical structure of the image, the dots of the halftone always threatened to become visible despite these efforts.

The dot diagram thus not only isolates the logic behind Peirce’s pragmatist philosophy, but it also serves remarkably well to isolate what I call the semiotic and technical logic behind the halftone process. I make a distinction between the semiotic and the technical as a way of suggesting what I see as the competing, and often contradictory, principles underlying the reproductive capacity of the halftone process. While the technical apparatus of the halftone screen allowed for the novel production of a regular arrangement of dots to stand in for photographic tones, its semiotic logic, on the contrary, seemed to require a reading of that structure of dots as virtually invisible.

In his 1927 essay on photography, Siegfried Kracauer explored this play between the semiotic demands of the halftone and the technical reality of its visual character in a way that reveals this ambiguity as a potential threat. Here, the dots of the halftone become a troubling visual presence, flitting in and out of one’s perception as a kind of spectre of mass-media ideology. In a spirit not too far from the comparative logic of Peirce’s diagram, Kracauer begins his essay with a rhetorical placement side by side of two photographs of young women: one a magazine photograph of a film star, and the other an old family photograph of a grandmother as a young woman. The old photograph arouses doubt (‘One has to believe the parents’, Kracauer writes, describing the incredulity with which one often views old photographs of relatives) in a way the magazine photograph seems incapable of replicating. The latter, instead, exudes the truth of the now, albeit through the strange visual appearance of the halftone reproduction:

This is what a film diva looks like. She is twenty-four years old, featured on the cover of an illustrated magazine, standing in front of the Hotel Excelsior on the Lido. The date is September. If one were to look through a magnifying glass one could make out the grain, the millions of little dots that constitute the diva, the waves and the hotel. The picture, however, does not refer to the dot matrix but to the living diva on the Lido.17

The last sentence strikes an uncanny chord, as if Kracauer has slipped into the ideological voice of mass-media culture itself. While Kracauer cannot help but notice the dots of the halftone, he also realises that, at least by the time of his writing, the power of the mass reproduced photograph meant a denial of such attention to technical specificity. One is reminded of that sense of coerced inattention evoked by his famous line from later in the essay: ‘In the illustrated magazines people see the very world that the illustrated magazines prevent them from perceiving’.18 Paying attention to the dots of the halftone would perhaps unravel the entire project.

What, then, do we make of this disconnect between the halftone’s unprecedented technical novelty as a printed image made up of dots and its eventual semiotic allegiance with photography, a mode of image production valued for its lack of any overt appearance of mediation? Even if the halftone was in the end assimilated into the larger history of photography, such assimilation was perhaps simply a way to manage a growing sense of doubt about photography’s coherence as an ontological category that the halftone itself helped to engender, if only for a brief period of time. To borrow a phrase from Peirce’s pragmatist vocabulary, the halftone proved to be a kind of ‘irritation of doubt’.19 It was the catalyst necessary for a reassessment of the nature of one’s belief in photography as a fundamentally truth-telling, accessible, and democratic medium.

Twenty years after introducing the side-by-side logic of the dot diagram as a model for achieving conceptual clarity, Peirce would again place two concepts side
by side, this time in the direct pursuit of semiotic clarity: the index and the icon. Much like the competing semiotic and technical logics of the halftone, the index and the icon represented competing demands upon the photographic image as a sign. Examples of real photographs, whether ‘instantaneous’ or otherwise, became for Peirce a means of calibrating these two semiotic categories against one another through a hermeneutic exercise not at all dissimilar from that of the dot diagram in 1878.

In what follows, I will trace the comparative visual logic of Peirce’s pragmatist diagram as it relates to two specific contexts: contemporary technical discourses on halftone technology, and the assimilation of the halftone image into illustrated journals of the period. Both contexts often involved the hermeneutic exercise of comparing visual specimens side by side in order to tease out their degrees of likeness or difference. As we will see, the introduction of halftone technology made the consequences of isolating the index from the icon in each of these spheres especially clear. The stakes, however, were not only those of esoteric semiotic theories, but of real viewers attempting to navigate in the most pragmatic way possible a visual culture dominated by semiotic inconsistencies.

The Halftone as Technical Object: Tracing the Pragmatist Logic of the Halftone Treatise

Unlike drawing, or even the assemblage of form from light and shade in intaglio printing, photography is not, as apparatus, interested in the semantics of the objects it depicts. Considered as a complex of mechanics, optics, chemistry, individuals, and corporations, photography does not intrinsically deal in meanings, only in quantities, wavelengths, and the management of light.  

Negotiating an understanding of the halftone as both technical process and reproduced image was a considerable aspect of the early commentary surrounding it. Whether in popular trade journals or technical manuals, the early years of the halftone were characterised by a widespread scepticism as to the usefulness and applicability of a process that seemed so fully to transcend the visual character of the reproductive processes that came before it. For one period commentator, the halftone seemed nothing more than an undignified, ‘vile process’ by which portraits of great men would be reduced to ‘a pattern nebulous, and made of dots and squares’. This scepticism, as we shall see, was often as much a matter of the complex technical operations behind the production of halftone plates as it was the resulting visual appearance of the halftone image within the pages of popular journals and magazines.

One of the fundamental technological innovations of the halftone screen was, after all, its novel manipulation of the physics of light. Directing light through a screen prior to its exposure on photosensitive material was a savvy way of harnessing complex scientific principles in pursuit of a rather practical problem: how to produce an image sufficiently broken up that it could be printed in relief. In attempts to weigh how much of this scientific knowledge was necessary for the production of halftone plates and screen, we find in early halftone treatises a commitment not to the positivism and empiricism that had dominated nineteenth-century thought up to this period of time, but instead to a logic of pragmatism not at all unlike the comparative visual logic put on display by Peirce’s dot diagram in 1878.

In one technical treatise from the period, for instance, the author attempts to offer only the most practical and meaningful analogies with which to describe the technical workings of the halftone process, thus bypassing their full scientific explanation. Acknowledging, for example, that it is actually the optical phenomenon of diffraction that allows the halftone screen to break up light into discrete units of exposure, the author nevertheless settles for the more practical (and indeed,
Having placed these two concepts side by side, the treatise writer then uses a comparative logic to determine not only that the concepts are similar enough to warrant interchangeability in this particular instance, but also that the pinhole concept, while perhaps less empirically accurate, is the more useful and pragmatic explanation for those involved in the halftone industry.

While the practical matter of producing halftone plates did not seem to require much, if any, detailed knowledge of scientific principles, there remains a curious insistence within these treatises on dazzling the reader with scientific jargon, even when included only as the object of mockery. As the writer of this treatise goes on to describe,

> An explanation of the action of the rays of light [...] through the apertures in the screen to form dots of different shapes and areas on the sensitive photographic plate would require extremely complicated diagrams and such a mixture of words and phrases as: ‘Dioptric image’ ‘penumbral effect’ ‘luminiferous ether’ ‘irradiation’ ‘diffraction’ ‘interference fringes’ ‘halation’ ‘fluorescence’ and the ‘undulatory’ and ‘vibratory’ theory of light. All of which will be spared the reader as being beyond the purpose of this book. We will consider only the practical methods employed in making a half-tone block.²³

For a statement aimed at denying the import of scientific information to the production of the halftone plate, its writer seems rather impatient to highlight precisely the kind of information he aims to withhold. Such an onslaught of scientific language perhaps reveals the considerable anxiety surrounding the fact that the halftone was as much an object to be made, or an image to be beheld, as it was a product of scientific knowledge to be grasped intellectually.

This anxiety, however, was not necessarily unique to the halftone. In passages such as these, the halftone treatise begins to echo a common theme within period discourses of industrialisation. As technologies of mass production became more complex and economies of scale increased, the much smaller and more local realm of individual human experience could seem, by contrast, ill-equipped to deal with the complex mobilisation of knowledge required for such industrial applications. The halftone’s origin point within the arena of the applied sciences threatened to undermine its practicality and intelligibility for those closer to the end of the supply chain, such as platemakers and image consumers alike.

In this sense, the moment of the halftone was also not so dissimilar from earlier moments of innovation in the field of photography, when overly complicated, technical details were often recognised to be superfluous to the average user. As André Gunthert has described, ‘Photography introduced the notion of user-friendliness that is now characteristic of how technology is marketed and distributed. Like all popular technology, it could not be offered for mass consumption unless the technical nature of the machine was hidden’.²⁴ Both the daguerreotype and the Kodak serve as case studies in the decision to suppress technical details in favour of promoting non-specialists’ engagement with the new technology.²⁵

The halftone, however, necessarily differed from these earlier manifestations of the theory versus practice divide in the history of photography. The halftone seemed to raise the spectre of heady, scientific principles in a way that transcended more typical concerns over instrumental, technical details common to other photographic technologies. Unlike in the daguerreotype or even the paper print, which tended to reproduce light in more or less the same manner as it appeared in everyday experience, the question of the halftone’s relationship to more complicated scientific theories of light was visually present at every turn, signalled by the undeniable, and perhaps even confusing, appearance of the dots themselves. Thus, in the case of another halftone...
treatise, questioning the applicability of scientific theories to everyday practice meant questioning directly the counterintuitive appearance of the dot structure:

Why it is that a network of black lines placed in front of the sensitive plate forms dots of varying size, but equal blackness, instead of simply cutting up the image into little squares of unequal density, is a problem which, even yet, is not adequately explained, though many elaborate theories have been advanced to account for it. We know the practical man does not like the word 'theory' and we shall abstain from using it.²⁶

Despite this treatise writer's claims to the contrary, it perhaps was in fact a practical matter to ask why the halftone screen formed circular dots as opposed to square dots because such an insistent visual fact could not be so readily ignored as one might wish when it came to confronting the halftone as reproduced image.

In each of these examples, the use of pragmatic language and rhetoric seems to offer both author and reader a way to manage the simple fact that any technical explanation of the halftone process demanded a not-so-simple instrumentalisation of the optical apparatus of photography – an instrumentalisation that had in fact haunted the conceptual unity of photography throughout its history. From 1839 onwards, it was immediately recognised, for example, that the potential usefulness of the photographic apparatus to scientific applications might not necessarily correspond with its usefulness as an image, with either side of the equation requiring vastly different frameworks for interpretation and management. Isolating photography's potential for scientific measurement meant isolating photochemical detection from photographic depiction, two related, but ultimately distinguishable, aspects of photographic technology – the index as distinct from the icon.²⁷ As early as 1839, Daguerre had also to decide which aspect of his photographic technology he would promote to the public, eventually settling on a roll-out of the daguerreotype primarily as a 'new type of image, with characteristics unlike any other at the time', over and above its potential to serve as a 'laboratory toy for amateur chemists'.²⁸ François Arago, on the other hand, in emphasising such non-iconic scientific applications as astronomical photometry, had ultimately missed photography's most immediate cultural impact as image rather than as instrument.²⁹

The isolation of photographic principles into discrete units of light exposure threatened to sever for good the technical and optical apparatus of the medium from its image-character as a sign – a startling confirmation of the fact, otherwise easy to ignore when confronting the photographic image, that, as Sean Cubitt has described, 'photography is not, as apparatus, interested in the semantics of the objects it depicts.'³⁰ We might even consider this instrumentalisation a kind of proto-digitisation of photographic technology, signalling in prescient ways the radical transformation in photographic ontology we have seen take place over the last twenty or so years.³¹

In his genealogy of digital image technologies, Cubitt has positioned the halftone as a crucial step in what he calls 'the development of the dominant system of texture in the twenty-first century.'³² As he describes, 'The application of ruled lines to halftone is a crucial step in translating the pitted, discrete elements of printing surfaces to the pixelated lines of contemporary screens'.³³ For Cubitt, the primary characteristic of digital technology is its substitution of arithmetic codes in place of semiotic modes of reference: 'The world of objects begins to be replaced by a world of measurements.'³⁴ Taking measurements necessitates systems of management and organisation, but not necessarily systems of semiotic or visual analysis. Situating the halftone at the origin of such a trajectory serves to reveal some aspects of the threat it posed in its own time – namely, a radical denial of semiotic legibility in favour of purely technical instrumentality.

For this reason, the process of reading the halftone reproduction as a visual image remained the primary testing ground for its popular success. However
unclear one’s scientific or theoretical conceptualisation of the halftone process might have been, the majority of viewers’ initial mode of engagement with it was visual rather than intellectual, taking place beyond the pages of the technical treatise. In 1892, an exhibition of photomechanical technologies mounted at Boston Museum of Fine Arts served as one such testing ground. The exhibition sought to categorise and define for a public audience the various new methods of reproduction then in use. The vast diversity of such methods, however, posed considerable challenges to the organisation of knowledge surrounding them, of which the halftone was merely one instance. In the exhibition catalogue, the halftone process seems to toe the line between self-evident principles and esoteric technological procedures, echoing the concerns of the earlier treatise writers:

It is self-evident that, in order to be able to produce a ‘half-tone’ block, the flat and gradated tints must be broken up into corresponding masses of lines and dots, but it would be impossible to enter into a detailed description of the various means proposed for the accomplishment of this end […] It may be said, however, that practice, in this case as in so many others, is ahead of theory, and that no thoroughly lucid and incontestable explanation of the phenomena involved has as yet been given.35

As in the treatises, the catalogue thus skirted the issue of imprecise technical understanding of halftone technology, but the exhibition itself went one step further, offering the halftone as a visual specimen to be read and interpreted by exhibition goers. The halftone section of the exhibition, for example, featured three objects by way of demonstration: a portrait photograph was displayed alongside a halftone plate made after it, as well as the final impression made from the halftone plate.

Recalling in many ways the side-by-side visual logic of Peirce’s dot diagram, this exhibition thus takes a rather pragmatist stand. Understanding the halftone’s relationship to its photographic original becomes a process of interpreting visual (as opposed to technical or scientific) information. The casual viewer of new processes of photomechanical reproduction, the exhibition and its catalogue suggested, must be skilled above all in the interpretation of visual data, regardless of the many imprecise and varied scientific explanations that might accompany discussions of halftone technology. While detailed explanations of the halftone’s manipulations of light threatened to align it more closely with the realm of scientific theory than practical application, adopting the tenets of pragmatism, as articulated by Peirce in 1878, offered one way to recuperate the subjective act of viewing as a fundamental component of reading the halftone. When faced with the imprecision of subjective observation and analysis in both philosophy and the sciences, it is significant that Peirce chose to double down on the subjective position of the viewer in his theory of pragmatism, which redefined the criteria of judgment in terms of practical actions and personal beliefs. The pragmatic subject had been positioned rather specifically through Peirce’s dot diagram from 1878 as a pragmatic viewer, one who is asked to worry less about precise appearances of things and to consider instead the practical consequences of putting one’s faith in what may well turn out to be superficial differences.

The Halftone as Image: Transforming the Graphic into the Photographic Sign

Images pass rapidly through consciousness, one incessantly melting into another, until at last, when all is over – it may be in a fraction of a second, in an hour, or after long years – we find ourselves decided as to how we should act under such circumstances as those which occasioned our hesitation. In other words, we have attained belief.36

When approached as a purely technical object, isolated from its image-character as spots of light on a photosensitive plate, the halftone had seemed to threaten a
conceptual distinction between the index and the icon, but not necessarily a practical one. Practically, the halftone was always meant to coalesce into a complete, iconic image to be read as such by the viewer, a fact signalled by the inclusion in the Boston exhibition of halftone reproductions and their originals side by side. This was the same side-by-side visual logic promoted in the realm of the illustrated journal, a realm in which the halftone reproduction would soon become the guiding principle of design and illustration, but not before some rather difficult questions had to be confronted.

When, for example, did it matter if an image made of a certain arrangement of graphic marks looked different from another arrangement of graphic marks? While it was perhaps useful to be precise in the reading of difference in some instances, to insist upon such reading in all instances was not only unnecessary, but also potentially even dangerous if it was to lead to misunderstanding or inaction. This question becomes crucial to the reception of the halftone within the mass press over the last decades of the nineteenth century. With the rise of photojournalism, so deeply influenced by social reform movements of the turn of the century and the pragmatist philosophies that invigorated them, it seemed finally to matter in a way it had not before that a halftone’s arrangement of dots was seen as effectively different from a wood engraving’s arrangement of lines.

For an image of poverty, unsafe living conditions, or political corruption to stir action, it had come to seem more and more crucial for that image to align visually with the values attached to photography. In one example from a February 1893 edition of *Harper’s Weekly*, a photographic spread of neglected, trash-filled New York streets emphasises the value of the photographic medium in promoting a progressive message of municipal reform (figure 4). As the

author of this feature points out, 'the unsightliness of many of these thoroughfares cannot be depicted in words, and only the photograph can represent them'. Strikingly, however, the same author finds it necessary to alert the reader that what he or she sees printed in the pages of the magazine are 'actual photographs limned by the sun and not by any artist's fancy', anticipating the novelty that halftone reproductions represented to contemporary readers. Despite its novelty in the pages of illustrated magazines, photography was nevertheless generally familiar to most readers as a medium for the transparent and clear communication of facts. Pragmatism, defined and promoted during this era by Peirce and his successors William James and John Dewey, demanded above all else this kind of commitment to evidence-based action and reform in the political and social arenas.

While the idea that photography was above all a transparent medium of visual communication made it the natural ally of Progressive Era politics and reform movements, the specificity and novelty of the halftone's arrival within the pragmatist intellectual culture dominant during this period in the USA deserves deeper scrutiny. Numerous scholars have made meaningful connections between the rise of social reform photography and the Progressive Era’s commitment to the philosophy of pragmatism, but the specificity of the halftone within that history has not often taken centre stage. As Kate Sampsell-Willmann has argued, Lewis Hine's particular brand of social documentary photography can be read productively alongside the pragmatist commitments of William James, especially his notion that consensus and communication can only become possible once the gulf separating individuals' subjective experiences has been overcome. Sampsell-Willmann describes the application of this pragmatist viewpoint to the question of photographic evidence and truth: 'In the absence of clear and dependable guidance from the photographer, how can photographer and viewer, or two viewers, see the same photo in the same way and share knowledge about it?' In her view, Lewis Hine's photographs fulfil this pragmatist demand in their commitment to a style of straight photography and his foregrounding of the individual subject:

By 'fixing' his perspective on a chemically treated negative, Hine removed one level of uncertainty by eliminating an infinite number of perspectives. By creating and reproducing his own 'straight' style, unique to him as an individual, Hine provided an opportunity for others repeatedly to verify his perspective. [...] Once others viewed his signs and agreed on their meaning, Hine could claim – in the philosophy of William James – to have established a truth.

In this sense, two viewers looking at the same photograph should be able to agree upon its meaning or truth in the same way as two thinkers when presented with the same hypothesis or doctrine should be able to agree upon its meaning or truth when operating with shared pragmatist values. If social documentary photography and pragmatist philosophy thus find common ground above all in this demand for a clear pathway toward consensus and agreement, then what happens when the visual form on which viewers are asked to agree is not the 'chemically treated negative' of straight photography, but the halftone reproduction, with all of its visual irregularity and discursive inconsistency in the first few years of its use?

As I will argue in this section, the halftone's eventual reception as a chiefly photographic sign was by no means an inevitable outcome of its introduction into the illustrated press in the 1880s and 1890s, where the majority of Americans would have encountered the work of social reform photographers like Lewis Hine or Jacob Riis. Within such a context, semiotic analysis of the halftone lay fundamentally with a beholder whose visual faculties were being pulled in multiple different directions by the competing semiotic structures, both visual and discursive, of late-nineteenth-century illustrated media. While the turn-of-the-century intellectual culture of pragmatism had in many ways given new evidentiary weight to photography as a transparent means of communicating individual, subjective experiences to others, the necessary translation

39 – Ibid.
of any photograph by way of some reproductive process for the popular press often threatened to produce the kinds of misreading based on convention and a-priori judgment that Peirce’s dot diagram had argued against in 1878.

In its early years, the halftone was integrated into the scheme of the illustrated weeklies and monthlies as simply one more element within an already diverse array of graphic codes. Journal and magazine editors were attracted to the halftone process almost immediately, but its status as a photographic medium was not necessarily considered its chief value. In fact, the widespread adoption of the halftone process hinged much more on the fact that it could be employed in the reproduction of multiple different types of illustrations, including hand-drawn illustrations or paintings, in addition to photographs from nature. For this reason, the reading of visual differences among a wide range of modes of illustration was perhaps less important than finding threads of semiotic similarity. It was quite common to find halftones of paintings next to halftones of photographs, each operating quite comfortably side by side (figure 5). While halftone reproductions of drawings or paintings still required an act of photography, the process was not yet tied exclusively to the photographic image as a unique or separate category of illustration. Within this context, the halftone was forced to split its semiotic and technical allegiance in radical ways. Despite its photographic origins, the halftone often exhibited more iconic similarity to the non-photographic forms of graphic illustration surrounding it.

A key figure to this story is Jacob Riis, author of one of the first books illustrated with halftone reproductions of photographs, How the Other Half Lives.
(1890). The case of Jacob Riis is an especially challenging one, straddling the evolutionary history of mass-media imagery with one foot in the past with the old illustration methods and one foot forwards with the photographic halftone. Riis’s photographs often appeared in the form of line drawings or wood engravings; even once his photographs were reproduced using the halftone process, they were still made to share editorial space with the older, hand-drawn processes.

Scholarship on Jacob Riis has largely viewed the early publication of his photographs as line drawings in newspapers such as the New York Sun or journals like Scribner’s Magazine as a fundamental distortion of the photographic medium and thus of Riis’s own intentions. As Bonnie Yochelson has argued, Riis intended his photographs to shock his audience into action ‘but the effort to shock was undercut by the means of reproduction’. It seems likely, however, that Riis would have been aware of the conditions of possibility governing photographic reproduction in the two genres of the daily newspaper and the illustrated magazine, and thus aware of the visual character they would take on there. As Gerry Beegan describes, ‘A photograph for daily press would be used merely as the basis for a line drawing. Only the weeklies and monthlies could print tonal images’. While illustrated weeklies and monthlies were much more likely to print halftones after photographs, the technological necessity that photographs be reproduced as line drawings in daily newspapers nevertheless meant that the idea of photography, with all its discursive claims to reportorial truth, came to be emphasised all the more in the newspaper genre.

Newspaper stories that wished to feature photography were limited to the hand-carved aesthetic of the wood engraving. For instance, a typical newspaper page from this era would often feature the curious juxtaposition of language that clearly signalled the presence of photographic images – ‘snap shots’, ‘instantaneous photographs’, ‘photographic interview’ – with conspicuously non-photographic images. One finds a similar situation in the first instance of Riis’s photographs appearing in the mass press. The New York Sun article in which Riis’s photographs first appeared, entitled ‘Flashes from the Slums’, was first and foremost a news story about photography, despite its use of manually designed images as the basis for reproducing those photographs (figure 6). The article focused just as much on the fact of Riis’s and his colleagues’ innovative use of flash powder in their photographic practice as on the social reform such a practice was meant to inspire. For Riis, however, such a focus on photography in a news story about his work was to bury the lead completely. What mattered to Riis were the stories his photographs told, and not necessarily the technical details of how they managed to do so.

Newspaper editors were eager to buy Riis’s photographs at the usual rate paid for presswork, but they were uninterested in his written work meant to accompany his images. Riis’s own side-by-side logic of pairing his photographic images with text was much better suited to the structure of the illustrated monthly magazine, a genre in which he indeed found success. Scribner’s Magazine agreed to publish his written work as an article for the Christmas issue of 1889, illustrated with both halftones and wood engravings after his photographs. The halftones appearing in the article, however, are not immediately recognisable as photographs. They have been retouched in such a way as to appear more like wash drawings (figure 7). Irregular edges and smoothed out details transform the photographic image into an illustrated vignette. Editors often considered such a transformation of the rectangular format of the halftone a necessary measure to ensure the aesthetic integrity of the illustrated journal or magazine. As Gerry Beegan has noted, ‘Machines were developed to produce vignette effects, softening the edges of the halftone in an attempt to inject an artistic element into the page design’.

The vignettes appearing in the Scribner’s article of ‘How the Other Half Lives’ reveal just one of the many ways that halftones were altered to fit the pre-existing aesthetic conditions of the illustrated magazine. Within many of the illustrated journals and magazines of this era, the visual language of photography was seen as antithetical to the aesthetic language already established by older methods of...
Figure 6. Unknown engraver after Jacob A. Riis (photographer), *Flashes from the Slums: Pictures Taken in Dark Places by the Lightning Process*, wood engravings, ca. 1888. From *New York Sun* (12 February 1888), 10. Library of Congress, Washington, DC.

illustration such as wood engraving. We find such attitudes quite clearly in popular treatises on how to retouch halftone plates for magazine work:

The brutal realism of the photographic image is not to be tolerated, and it falls to the retoucher to remedy the defect to just that nicety that there is not undue prominence of the unpleasing feature, nor yet that entire removal of it which will at once make it conspicuous by its very absence.  

In many cases, the retouching of halftone plates served to overwrite the tonal dot structure of the halftone with a linear structure borrowed quite explicitly from wood engraving. Beegan argues that 'Throughout the production process, from the making of the negative to the finished block, the aim was not, in fact, photographic facsimile but the production of an image matching the wood engraving’s strong visual impact'.  

Halftones appearing in weeklies such as The Graphic were heavily retouched with starkly visible hatch marks well into the first decade of the twentieth century (figure 8). In this context, what mattered most was the semiotic flexibility of the halftone plate, which could be manipulated to fit the graphic codes already present within the illustrated journals. A rigid adherence to the visual language of photography was seen as the halftone's great liability, not its strength.

A shift, however, began to occur in the Scribner’s article of 'How the Other Half Lives'. Instead of the linear appearance of wood engraving seeping into the tonal appearance of the halftone as in the earlier examples, the article features a number of wood engravings, executed by the artist Kenyon Cox, in which linear structures begin to conform instead to both the format and internal dot structure of the photographic halftone. Unlike the many vignetted illustrations that fill the pages of the article, the majority of Cox's images fill out a full rectangular format, aligning themselves with the rectangular formats of both the unaltered halftone and the straight photographic print. In one example, illustrating 'An English Coal-Heaver’s Home', the small lines and dots that make up the image begin to approach, in both regularity and minimised scale, something like the all-over tonality created by the halftone’s dots (figure 9). The large black curtain behind the female figure to the left


50 – Beegan, Mass Image, 177.
is given texture through a regular array of white hatch strokes. In this and other passages, we find an almost mechanical subordination of the engraver’s strokes to the overall tonality of the original image. In this instance, what it means to reproduce a photograph has moved beyond the mere reproduction of iconic, visual content. The artist reproduces the tonal structure of the image as well, and is perhaps able to do so by taking a cue from the halftone’s discrete, regular, and minimally visible dot structure. It is perhaps only in such transitional images as these that the halftone becomes truly visible for the first time – its technical logic and semiotic logic in harmony for one brief but critical moment in time.

The publication of the book version of *How the Other Half Lives*, published by Scribner’s just one year after the appearance of the full-length article, picks up in many ways where the Kenyon Cox wood engravings leave off. The full-length book publication recycled each of the illustrations from the *Scribner’s Magazine* article, with the addition of seventeen halftone reproductions of photographs; no new wood engravings were made for the publication. The book format thus represents a reorientation of the method of side-by-side, comparative reading of the halftone that I have been tracing thus far. In the illustrated magazine, the visual control against which all new processes were measured and to which they were made to conform was the wood engraving; in the 1890 book, however, the visual control becomes the photographic halftone itself. The tonal aesthetic of Kenyon Cox’s ‘Coal-Heaver’s Home’ comes into its own in its reuse for the book edition, coming to seem even more like it has been calibrated specifically to meet the visual demands established by the halftone. Elsewhere in the book, retouched vignettes of ‘Street Arabs’, originally designed for the aesthetic format of the monthly magazine, enter into new conversation with largely unaltered rectangular halftones of the same subject, appearing just a few pages earlier (figures 10 and 11). The common denominator of ‘Street Arab’ iconography in both instances promotes a comparative visual logic that favours a new kind of recognition of the categorical difference between the two modes of illustration: the rectangular halftone reads as photographic all the more against the aestheticised halftone vignettes.
In other instances, the relative isolation of many of the full-page halftone images in the book version of *How the Other Half Lives* (figure 12) likewise requires a different mode of reading than its previous iterations, one that takes us even further from the context of the mass press that I have attempted to trace so far. The format of the illustrated book called for the separation of text and image in a more explicit manner than had been the case in either the newspaper or journal articles that published Riis’s work previously, with the majority of the halftone reproductions following the convention of the tipped in page as opposed to the dialectic, comparative logic to be found in either the previous example of the ‘Street Arabs’ or many of the hybrid spreads of illustrated magazines discussed earlier. The isolated, full-page halftone reproductions in *How the Other Half Lives* thus offer a kind of exit strategy for this new mode of visual media – an opportunity for the halftone to slough off for good the old visual codes of graphic illustration.

Already as early as ‘Flashes from the Slums’, it had become clear that the idea of photography was necessary to the reception and success of Riis’s pictures, but that idea, signalled primarily through language, had not yet become aligned with the halftone as the reproductive image made to bear the weight of the idea. Idea and image had instead to seek each other out on new ground, and Riis’s book version of *How the Other Half Lives* seems to have quickly filled this purpose. The book becomes a place where discourses of photographic realism and truth might attach themselves to the ambiguous semiotic structure of the halftone, which, as we have seen, had elsewhere been used to reproduce a variety of images, and not only
photographic ones. The effects-oriented approach of Riis’s social reform practice, aimed above all at changing minds and arousing action, challenged the ways that the illustrated media had typically situated photography within its pages. His photographs had to be made to speak, but to do so seemed to require a denial of
technical knowledge of specific modes of photographic practice in favour of the immediate legibility of the sign.

‘So you see, I am disqualified from being a photographer’, Riis would later write in his autobiography: ‘I am clumsy, and impatient of details. The axe was ever more to my liking than the graving-tool’. In Riis’s mind, being a photographer, especially for the press, meant being a tinkerer, someone skilled in the finely tuned manipulations of the ‘graving-tool’, the effects of which, as we have seen, were frequently foregrounded in the retouching of halftone plates. The semiotic codes of the halftone were highly controlled by such manipulations, so much so that they seemed to dispense with the semiotic structure of photography altogether. If the majority of halftone reproductions appearing in the illustrated journals and magazines belonged primarily to the careful semiotic refinement of the graving-tool, then Riis’s photographs seemed all the more to belong to the broad strokes of the social reform axe.

For many reviewers of the full-length publication of How the Other Half Lives, it was exactly this lack of refinement that in fact justified a reading of uniquely photographic values into otherwise poor-quality halftone reproductions. Recall, for instance, one reviewer’s opinion that, ‘while there is not much to be said for [the photographs’] artistic merit, there is something very unusual, not to say interesting, in looking in at midnight with the unerring eye of the “Kodak”.’ Another characterised the book as being ‘illustrated by poorly printed pictures from instantaneous photographs’. With this example, we see the strange logic that allows a technically poor halftone image to be read, paradoxically, as semiotically rich – rich, that is, in photographic value. Perhaps it is even because of the absence of technical quality that halftone reproductions in this instance could come to stand in for the category of photographic image production, largely upheld as valuable. It is almost as if the lack of technical quality had opened up a conceptual space into which the idea of photography could settle more permanently than it had done in other applications of the halftone elsewhere.

Much like the halftone platemakers discussed in the previous section, Riis likewise felt that he could do away with such fussy matters as light exposure or principles of photochemistry. Uninterested in overly technical explanations of photographic process, Riis preferred to think of photography as a practical tool. He described photographic chemistry with wonder, but it was a kind of secret he did not want spoiled by too much explanation: ‘I do not want it explained to me in terms of HO₂ or such like formulas, learned, but hopelessly unsatisfying. I do not want my butterfly stuck on a pin and put in a glass case’. Riis thus denied the two primary discourses of technical mastery most often attached to both photography and its reproduction – mastery over photographic technique on the one hand and mastery over engraving techniques on the other. Doing so perhaps allowed for a more unified concept of photography to attach itself to the halftone, a concept defined neither by its technical components nor by its visual resemblance to other media, but by its coherence as an independent idea. As we have seen, overt insistence on the scientific or technical principles of the halftone threatened to position it as a purely indexical form – not so much an image to be read as a set of complex technical concepts to be understood and absorbed. At the same time, retouching of the halftone plate with formal techniques borrowed from engraving threatened to align its iconic character solely with the realm of manual illustration, thus denying its status as photographic. Having avoided either fate, the halftone perhaps situates itself, in the end, less at the messy boundary between the icon and the index than at the point of their mutual negation.

What is lost, however, in this process of negation? Several years after Riis’s publication of How the Other Half Lives, we begin to find arguments for a full allegiance of the halftone with photographic modes of signification, but only at the expense of its allegiance with the modes of labour and production that had sustained it. In an argument against the manual retouching of halftone plates,
one writer makes the case for the truly ‘mechanical’ halftone, hunted back, as it were, to conditions specific to photography: ‘The half-tone is based on photography, and the negative is the keystone of the arch which supports the whole structure, and its future success in any general and comprehensive estimate must be subject to the same conditions as photography’.\(^55\) Around the same time, older conventions of captioning, which situated both halftones and wood engravings within the same deferred language (‘from a photograph’), eventually gave way to captions that took for granted the immediacy of the photographic act, the presence of which the halftone itself is now able to signal through present-tense language – recall that ‘exhilarating incident during the Photographing of an unwilling Cow Bison’ mentioned at the beginning of this article (figure 2). With this shift I believe it became clear in a way it was not before that the most effective deployment of the halftone in the popular press ought to promote its consistency not with the visual scheme of the illustrated journal but rather with the still-developing ontological and semiotic category of photography. To do so, however, implied a negation of the manual labour required to produce the halftone plate, especially that of the thousands of retouchers and wood engravers of the mid to late nineteenth century, whose loyal subservience to the discursive and semiotic codes of photography has all but erased their contributions from the history of the graphic arts. This erasure stands out all the more against the social and labour reform messages of many of the photographs from this era, and indeed deserves greater attention than the space of this article allows.

As art historians, we must ask what effect our discipline’s complicity with this erasure, favouring as we do the names of single authors like Riis over the many hands involved in the process of translating his photographs for the mass media, has had on the full understanding of such historically significant visual forms as the halftone reproduction. As Neil Harris argued in his seminal essay on the ‘halftone effect’ from 1979, perhaps it is not from the position of art history at all but rather intellectual history more broadly that one must approach the halftone – this despite the fact, as he notes, that ‘intellectual historians have done little with the history of our visual processing’.\(^56\) With this in mind, I hope to have offered in this article one way of strengthening our understanding of the halftone’s place in turn-of-the-century US culture. My attempt has sought not only to adjust the pre-existing art historical and theoretical framework of the photographic index and icon to the intellectual stakes of pragmatism, but also to highlight one specific instance in which pragmatism was framed as a specifically visual exercise analogous to the viewing of the halftone image, as in Peirce’s dot diagram of 1878.

As we have seen, the halftone did not need the discourse of photography to gain legitimacy in the popular press – in fact the language of photography at times threatened its legitimacy within an arena still wedded to the aesthetic appeal of the wood engraved illustration. Instead, it was perhaps photography that needed to recruit the halftone over to its side in order to fulfil growing demands for a more coherent conceptualisation of the medium, not merely as a set of technical or optical principles but as an idea around which one might learn to act. As Peirce wrote in his 1878 essay, ‘The essence of belief is the establishment of a habit, and different beliefs are distinguished by the different modes of action to which they give rise’.\(^57\) Eventually, reading the halftone becomes simply another habit in the larger process of reading the photograph. The habit in turn supports the idea.

As Kracauer had described in 1927, photography was often akin to fashion: ‘translucent when modern and abandoned when old’. As such, signs of past fashion in old photographs ‘[protrude] into our time like a mansion from earlier days that has been marked for destruction […]. Usually members of the lower class settle in such buildings’.\(^58\) Similarly populated with members from the lower class, Riis’s halftones of tenement life in turn-of-the-century New York complicate our understanding of the timeliness of photographic reproduction to late-nineteenth-century visual media. The halftone had become by the mid twentieth century as transparent

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56 – Harris, ‘Iconography and Intellectual History’, 308.


a sign of photographic ontology as the hand-drawn illustrations they originally appeared alongside had become opaque and outdated, no longer considered to have any reproductive purchase on the photograph as sign. As I have argued in this article, there was for late-nineteenth-century viewers a real-time wrangling with semiotic inconsistency and difference in the illustrated newspapers and journals of that era, which required a continual negotiation of both the technical and semiotic logics of the halftone. If it is true that the story of the halftone ends largely in consensus about its semiotic allegiance to photography, tracing such a story also offers a way to reassess, by making strange again, the continued stakes of that consensus into our own time.