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Experimental Metallic Surfaces and Absent Images: On the Materiality of William Henry Fox Talbot's Photomechanical Practice

This essay engages the approximately 100 metal plates held in the William Henry Fox Talbot collection in Oxford's Bodleian Libraries, examining them as material traces of Talbot's (1800–1877) experiments in photomechanical printing. Blank or bearing illegible images, these plates are often dismissed, but they shed clear light on the trial-and-error phase of Talbot's photomechanical practice, a crucial yet unexplored aspect of his scientific and photographic research. Shifting the focus from image content to the materiality of Talbot's photomechanical research during the late 1840s and the 1850s, the essay challenges and expands the prevailing narrative centred on his photochemical pursuits. More broadly, it calls for a reassessment of photographic 'mistakes' and 'accidents' so often simply omitted from history as central to this experimental medium.

Keywords: William Henry Fox Talbot; photomechanical processes; experimental practices; practical knowledge; metal plates

Throughout the twentieth century in photographic and art history, representational images were the focal point of analysis and the main object of attention. What photographs depict on a two-dimensional surface has served as a criterion to divide them into categories and genres following, in most cases, art market and art historical standards. Indeed, photographs' subject matter, aesthetic qualities, and makers are traditionally considered determining aspects of analysis. These categories are also used to create and describe photographic collections. But what happens when the photographic image is absent or no longer clearly visible on the physical support that was supposed to carry it? The reasons

such absences occur are multiple. When dealing with nineteenth-century experimental photographic practices, it is not uncommon to come across objects severely affected by chemical and mechanical damage. On rare occasions, such as the one addressed in this article, it is also possible to find preliminary or work-in-progress material that preceded the photographic phase of an experiment. These kinds of objects are often pushed to the margins of historical analysis because of the absence of representational images, the way they look, damaged surfaces, and the *too* visible materiality of the support. They stand as unfamiliar entities, distinct from the recognisable stages of photograph creation – such as the negative or the positive. Instead, they often embody the transitional phases of experimental practices, failed trials, remnants untouched by the practitioner's hands, or the afterlife of a photograph when its image no longer remains.

Let us consider a rusty, scratched, waxed, and ultimately blank metal plate (fig. 1). Nothing in

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1 Waxed steel plate with bevelled edges, stamp on the verso of Hughes & Kimber, London, 18 × 23 cm. Oxford, Bodleian Libraries, MS WHF Talbot 74

its appearance would connect it easily to photographic practices, and yet, between the late 1840s and the 1850s, this plate and its surface were at the centre of Talbot's pioneering efforts to combine photographic and printing technologies in one process. These objects, many of which are inventoried as "blank steel plates for photoglyphic engraving" or simply "[blank?] plates", are in fact material traces of Talbot's experiments in photomechanical printing, which led to the photographic and photoglyphic engraving processes.¹ These were two intaglio processes, patented respectively in 1852 and 1858 and generally known to photographic history as forerunners of photogravure, a photomechanical process invented in

1878 by the Czech painter Karel Klíč.² The metal plate reproduced in fig. 1 is just one of approximately 400 printing plates or clichés engraved or owned by Talbot throughout his photomechanical practice. These objects can be found in the various Talbot collections, the most significant in terms of the number of plates being the Talbot Photomechanical Collection at the National Science and Media Museum (hereafter NSMM).³ In this article, I focus on the 106 plates held in the Fox Talbot Archive at the Bodleian Libraries, Oxford (hereafter Talbot Archive), previously the Talbot Collection from Lacock Abbey, Talbot's ancestral home.⁴ These plates present a set of characteristics that make them an unique case

study; unlike other collections of Talbot's plates, the majority of the Oxford material lacks figurative images or features surfaces that are severely damaged. This set of plates was rediscovered in 2008, much later than the plates in the other collections, and in a rather unconventional place: a kitchen oven in Lacock Abbey.⁵ It was probably their appearance and the lack of figurative images that led to their being relegated to an old oven for many decades.

Despite their historical relevance, the metallic nature of Talbot's plates, coupled with the absence or deterioration of images, has posed a challenge to scholars. In fact, after these items were discovered in Lacock Abbey's kitchen and finally entered the collections of the Bodleian Libraries, they have never been the object of scholarly analysis. Similarly, Talbot scholarship has long overlooked the hundreds of paper scraps and test prints found in various Talbot collections bearing faint images in favour of better-preserved specimens that scholars have used to create what Mirjam Brusius has referred to as "Talbot's persona", the corpus of photographic images and achievements that is generally understood as his oeuvre.⁶ New approaches to Talbot studies challenge this narrative, such as the seminal edited volume *William Henry Fox Talbot: Beyond Photography*.⁷ More recently, in his book *The Forms of Nameless Things*, Geoffrey Batchen prompts us to consider a selection of 24 images made by Talbot between the 1830s and 1863 that Batchen defines as "his least familiar photographs".⁸ Most of these photographs are experimental and, similarly to the metal plates here discussed, do not present figurative images on their surfaces. Photographic historians, accustomed to looking for representational images, find themselves looking at chemically stained pieces of paper that reveal nothing but the experimental and chemical nature of early paper photography, i.e., a trial-and-error process.⁹ Image-led, technological, and strongly biographical approaches which have characterised photogra-

phy and Talbot studies for a long time fall short in grappling with the material complexity of Talbot's photographic experiments. Consequently, Talbot studies have intentionally excluded certain materials, such as faint paper photographs and blank metal plates, that do not align with the carefully crafted narrative of Talbot as a photographic pioneer capable of producing easily identifiable images.

In this regard, the inventory description of the plates in the Talbot Archive as "[blank?]" is particularly intriguing. It privileges the visual content and emphasises its absence. And yet, with its question mark, it leaves open the possibility that pictorial representation might one day be recovered from the plate's surface. Due to their metallic support and lack of visible images, these plates are catalogued as objects rather than photographs, which thereby disconnects them from the experimental photographic context that informed their use. In spite of critical bodies of work in the fields of visual anthropology and material cultural studies which have highlighted the importance of thinking materially about photography, photographs' representational content remains one of the most important criteria in their archival descriptions. As discussed by Elizabeth Edwards and Janice Hart in the influential volume *Photographs Objects Histories*, the absorbing power of the photographic image has long led photographs to "become detached from their physical properties and consequently from the functional context of a materiality that is glossed merely as a neutral support for images."¹⁰ The same orientation towards the material has informed the work of printmaking scholars and makers, who challenge art and print historians to inquire deeply into objects' production process.¹¹ However, despite the fact that we are no longer debating the essential role of materiality in unpacking the many histories of photographs and prints, the material approach does not seem to be consistently applied in the study of experimental scientific practices, such as the plate

(fig. 1) discussed above, where the main sources are still written accounts and images' visual content rather than the physical traces of their making.¹²

Another major issue addressed in this article, and one that requires more scholarly attention, concerns the relationship between 'failure' and archival absences.¹³ Blank plates are often marginalised in historical analysis not only because of their challenging materiality but also because their epistemological value is frequently questioned. The plates discussed in this article are, in fact, material traces of trials that ultimately failed to produce a stable printing process applicable on a large scale. The reality is that, between the mid-1840s and 1877, Talbot was the only known practitioner to use these processes, achieving results of inconsistent quality, as his archive reveals. This kind of material does not typically feature in exhibition displays, catalogues, or scholarly publications, which are often platforms to showcase the best of a practitioner's production. However, this approach isolates the most successful outcomes from the broader context of a practitioner's work. As I argue, it is crucial not only to identify 'failed' objects within archives and collections – often a challenging task – but also to integrate them into the historical narrative, drawing attention to the different stories they can tell about well-known figures such as the British inventor of photography. Material 'failures' not only provide insight into a practitioner's experimental practice but also reveal often overlooked aspects of their work – such as Talbot's evolving idea of the 'photographic' from paper photography to ink and metal.

Bringing together all these strands, in this article I shift the focus from the visual content of Talbot's photomechanical work to the materiality of its experimental phases to cast light on this overlooked aspect of his photographic and scientific endeavours. Objects often seen simply as lacking because of their missing photographic

images remain nevertheless integral to our understanding of Talbot's photographic work and his material life as a Victorian experimenter and practitioner.¹⁴ As we shall see, the study of Talbot's blank and damaged plates reveals the criteria that informed his experimental practice towards metal and ink photography, such as durable printing plates able to support a long print run, compatibility with extant printing technologies, and total absence of hand retouching in the plate photoengraving. I specifically concentrate on the plates housed in the Bodleian Libraries to argue that their presence in the Talbot Archive urges us to give due consideration to this neglected material and contemplate its place within the broader context of Talbot's photographic practice, challenging and expanding the current narrative.

1. Talbot's Photomechanical Practice

Talbot is well known as a wealthy gentleman of science.¹⁵ In 1839 he was recognised by the scientific community as the British inventor of photography and, two years later, in 1841, of the positive/negative process on paper, which he dubbed the "calotype".¹⁶ A lesser-known facet of his work which ran parallel to his photochemical research from the late 1840s until his death in 1877 involved metal and ink.¹⁷ All the plates I discuss in this article belong to this latter part of Talbot's photographic work. With the photographic and photoglyphic engraving processes, Talbot aimed to make images that would maintain the 'natural' appearance of chemical photographs and have the stability of ink prints from engraved or etched metal plates, mainly steel. The overall objective of Talbot's research on ink and metal photography was to provide permanent photographs and enduring printing plates compatible with period technologies that were able to support the high demand for prints. In comparison to daguerreotypes – which were singular objects

and, due to their metallic support, could not be bound in publications – and salted paper prints (a paper-based chemical process), ink prints were more stable and, consequently, less subject to fading. These characteristics, together with the possibility of having a higher number of reproductions from the same printing plate, made Talbot's experimentation in photomechanical printing appealing, especially for the printing and book industries. However, despite Talbot's efforts – lasting almost four decades – his photographic and photoglyphic engraving patents were never commercialised, and he was the sole practitioner actively using them. Even if these processes are considered unsuccessful in practice and history, their study opens important considerations about the materiality of Talbot's experimental practice and how materials reflected his evolving idea of the 'photographic'.

Before analysing the metal plates in the Bodleian Libraries, it is important to provide a brief technical description of the processes and the materials Talbot employed, as the practical and material aspects of his experiments are key to my argument.¹⁸ Both the photographic and photoglyphic engraving techniques started with Talbot covering a clean and well-bevelled metal plate (steel, copper, zinc, or steel-faced copper) with an emulsion of bichromated gelatine that had photosensitive properties. A flat natural object, or a paper or glass photograph, was laid on the gelatine, blocked in a traditional printing frame, and exposed for a period of time that varied from half a minute to five minutes, depending on the amount of sunlight. To enhance the detail of the impression, natural objects were often moistened so that they became heavier, and every detail would come into contact with the photosensitive gelatine, while paper photographs were waxed to increase their transparency. After this operation – also known as contact printing – a photographic impression became visible on the gelatine layer covering the plate. This concluded what Talbot called the "photographic part" of

the process.¹⁹ After being exposed, the portions of the gelatine layer that had been hit by the sun rays became hard and of a dark brown colour while the parts covered by the object remained yellow and were easily washed off under water. Talbot would then pour on the plate a water-based etching solution (bichloride of platina in the photographic engraving and perchloride of iron in the photoglyphic engraving) to etch the design photographically impressed on the gelatine. The plate was washed again with water to eliminate any remnants of etchants and used as a standard printing plate: it was warmed (usually with a lamp), inked, wiped off, and passed through the printing press to produce an ink print (figs. 2–3). As obtaining photographic halftones was the most challenging aspect of the processes, Talbot developed two techniques. In the photographic engraving process, he patented the "photographic veil", a screen usually made of various thicknesses of gauze which gave a uniform texture to the subjects, with the advantage of distributing the ink more equally during the inking and wiping phases (as seen in fig. 3).²⁰ In the photoglyphic engraving process, Talbot applied dusted resin directly on the metal plate with the same aim of the "photographic veil" of texturizing the plate before the photographic impression was made.²¹

Even if the processes involved a great deal of photographic chemistry, techniques, and materials, they also drew on materials and techniques from the printing and printmaking industry. There is, however, a crucial aspect to stress: in both the photographic and photoglyphic engraving, Talbot worked exclusively on the marking of the metal plate, applying the design (or image) with photographic chemistry, and etching it with chemical compounds. He was not involved in the printing of the plate, as this delicate and extremely technical phase was left to "practical hands", in other words to the printers who assisted Talbot – mainly George Barclay, Thomas Brooker, and the Banks family business.²² Hence,



2 William Henry Fox Talbot, *Fern*, ca. 1852, photographic engraving, steel plate, 10.2 × 7 cm. Bradford, National Science and Media Museum, acc. no. 1937-443



3 William Henry Fox Talbot (photographer), George Barclay (printer), *Fern*, ca. 1852, photographic engraving, print, 20.5 × 15 cm. Bradford, National Science and Media Museum, acc. no. 1937-5080

the plates and their metallic surfaces were the actual testing ground of Talbot's processes, the focus of all his attention. However, despite their relevance and the fact that these were the only 'authorial' objects made by Talbot's hands, these experimental printing plates are largely under-researched. By contrast, prints that were 'final' photographic products intended for sale and circulation have garnered far more attention, both in studies and digitalization projects.²³

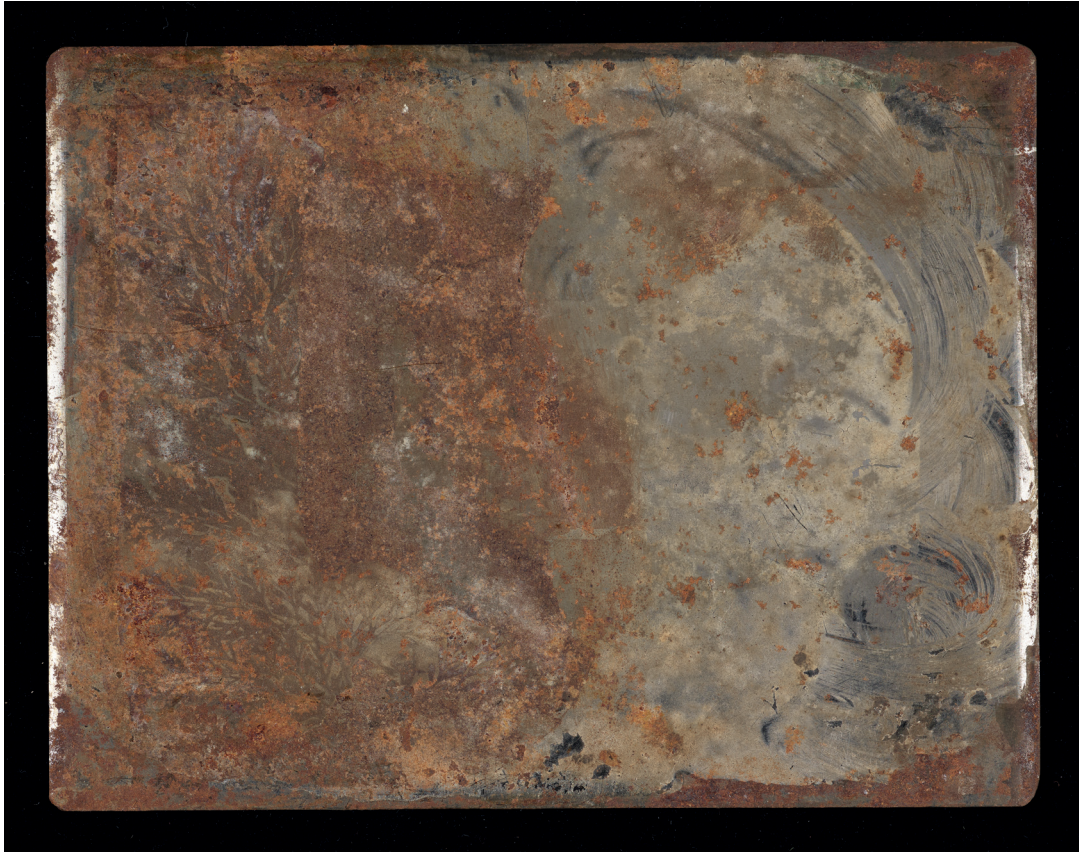
In the specific case of the Talbot Archive, the description and study of the plates are complicated by several elements, including the absence of printed images and, in most cases, the absence of any images at all.²⁴ Because these objects struggle to fit into the conventional categories of

artworks, such as 'unique' and 'original', they often defy the standards of historiographies, museums, and art markets. Consequently, they fall into the grey area of photographic collections, disconnected from the production process that could otherwise restore their meaning as material traces of Talbot's experimental practice in the making of new ink-photographic processes. Either "blank" or carriers of illegible images, the Bodleian plates cast light on the making and designing of Talbot's photomechanical experiments. With their presence, the plates allow us to address objects and practices that are usually absent from photographic history, such as remnants, unused or working material, experimental processes, and failed attempts.

2. The Bodleian Plates: Experimental Surfaces

Now that the technical background related to Talbot's photomechanical processes has been addressed, we can move on to analysing the Bodleian plates. To begin with, it is essential to emphasise the exceptional nature of this archive. The Talbot Archive holds 106 metal plates, the vast majority of which, as highlighted by the inventory descriptions, are completely blank or severely rusted. These plates are different from the other plates that belonged to Talbot, held largely by the NSMM, where the engravings are well visible and the plates in better condition. The

photoengravings on the NSMM plates, often accompanied by their respective prints, depict buildings, portraits, manuscripts, and contact printing images of natural objects like leaves (as seen in fig. 2). Talbot tested a wide range of subjects, and even if the NSMM plates have some rust and scratches, they are in good condition overall – it is possible to study all surfaces, both recto and verso. If these plates can successfully be approached with an interest in the visual content of the engravings, the same does not apply to the Bodleian plates where images are absent, and the recto of the plate is not always accessible due to rust damage or protective paper stuck to the plates. To interpret these plates, we need to



4 William Henry Fox Talbot, *Fern*, ca. 1852, photographic engraving, steel plate, stamp on the verso of Hughes & Kimber, London, 10 × 13 cm. Oxford, Bodleian Libraries, MS WHF Talbot 87

approach Talbot's photomechanical work as a crafted experimental practice, where materials as well as scientific and practical knowledge intertwine to pave the way for the design of a new process.

The Bodleian plates must be understood as experimental surfaces, kept by Talbot as records of his trials, a material archive of his photomechanical practice. Experimental plates (fig. 4) are complex objects to analyse and may be described in the inventory as generically as "26 [blank?] steel plates".²⁵ However, if we look closer, even though the large majority of this particular plate is blank, we can still see the photographic engraving of a fern on the left-hand side, almost entirely covered by rust. From this detail, it is clear that the plate was one of the numerous tests Talbot carried out during his photomechanical practice, many of which, especially in the late 1840s and early 1850s, focused on flat natural objects. Its damaged surface presents the condition of most of the plates in the Talbot Archive, posing a challenge to both scholars and the institution in charge of their conservation.

It is indeed quite unusual to encounter such an extensive collection of experimental material associated with a renowned practitioner that, despite lacking visible traces of their work or presenting extended damage, has been preserved. Metal plates (whether made of steel or copper) were relatively costly materials and consequently valuable goods. Among engravers it was customary to rework plates that had not yielded successful results by re-etching or re-engraving the surface, a practice that the physical properties of the material easily accommodated.²⁶ Even finished engraved plates were not always immune to alteration or destruction. Due to the value of the material, there was an important secondhand market of printing plates. After the death of a practitioner or the end of their business, the plates were often sold to other engravers who could utilise part of the existing design or re-engrave them with new images. Taking these factors into account, it be-

comes evident that original nineteenth-century metal plates are rare objects to find in pristine or even good condition – or to find at all in the archives. Encountering such a large collection of metal plates in poor state and without visible photographic impressions provokes questions about why this material was preserved at all and what their place within Talbot's photographic work might be. We are not faced with the casual survival of a few blank plates, but rather with more than a hundred kept apart from the other (more polished) engraved plates produced by Talbot in the NSMM.

Key to Talbot's practice was the retention of all plates, both engraved and blank. As Larry Schaff has pointed out, from a young age, Talbot demonstrated a self-aware attitude towards keeping objects related to him, as exemplified by the 1808 letter of an eight-year-old Talbot instructing his stepfather to "[t]ell Mamma & everybody I write to keep my letters & not burn them".²⁷ Talbot's descendants maintained the same attitude, contributing to the creation of vast and heterogeneous collections documenting Talbot's activities in a variety of fields.²⁸ In addition to the approximately 100 blank and damaged plates, the materials housed in various Talbot collections include letters, notebooks, photographs, ephemera, small sculptures, and much more.²⁹

In the specific case of Talbot's photomechanical practice, his engraved plates served as specimens and records of his tests. Unlike the archives of commercial engravers or printmakers, it is evident that Talbot did not retain these metal plates for the purpose of printing from them, as none of his plates had a commercial purpose.³⁰ Therefore, this is not an archive of printing plates available for recurring use. Instead, it is an archive of experiments, material notes preserved by Talbot as references of past trials. Each of these plates owes its existence to the experimental, work-in-progress nature of the photographic and photoglyphic engraving processes. The plates are a sort of working material, to expand

on Omar Nasim's notion of "working images" which address the in-between phases of image editing and making prior to their circulation in the public sphere.³¹ In a similar way, for Talbot, his experimental plates were essential to achieve the finished product, which was not only a paper print but a new photomechanical process to patent. They were, therefore, a site of knowledge making and experimentation. When we look at the metal plates as a single body of work rather than focusing on their individual visual content, we see how each of them was a crucial part of the designing and thinking of the experimental process. Every plate marked the test of a method, a material, or the combination of both, reflecting the objective of Talbot's research: an effective way to reproduce photographic halftones and images in ink, on a large scale, where the image was made by photography alone.

Throughout his life, Talbot kept notebooks and loose notes related to many aspects of his scientific research. Particularly important for us are his notebooks on photographic experimentation.³² However, the plates in the Talbot Archive suggest that for him it was not enough to keep the research notes of the experiments with the written outcome of the trials and related observations. It was essential to also keep the plates and the proofs as they were material notes, complementary to the written account. It is useful to consider Talbot's archive, the one he assembled during his lifetime, which is now spread across several institutions and private collections, as what Kelley Wilder has called an "hybrid expanded notebook", an ensemble of heterogeneous working material able to cast light on scientists' way of learning and observing while creating and accumulating material traces of their practices.³³ In Talbot's archive, written research notes were closely connected, sometimes physically, with photographic objects such as metal plates, which were integral to his practice of observing and recording experiments. In particular, Talbot's loose notes concerning his

photomechanical experiments are spread across several collections, mainly the NSMM (uncatalogued MS) and the British Library, making it difficult to study this material and, potentially, to connect it with photographic objects.³⁴ What appears clear, however, is that from the late 1850s onwards, the close connection between written records and photographic objects became even more evident as Talbot established a system to number his experiments and link test records with the experiments themselves (proofs and plates).³⁵ We do not know if Talbot kept the metal plates together with notes and proofs, as this information was lost during the acquisition and rehousing of this material. However, it seems likely that they were originally held together, since a few plates in the NSMM have been found with small technical notes enclosed with them. For Talbot, the metal plates were a physical trace and reference of what worked and what did not, a map of the different ideas and directions that his experiments took over time. They were there, accessible, stored in a relatively safe way, to serve as his personal working archive of his development of the photographic and photoglyphic engraving processes while he was still experimenting on them.

3. Unpacking the Materiality of the Bodleian Plates

The Talbot Archive stores both plates used and ruined by chemical and mechanical damage as well as a few dozen plates that appear not to have been used. Several plates are wrapped in a thick, rough, light brown-yellowish paper, and then, in direct contact with the plate, a thinner, very delicate yellowing paper. It is conceivable that the plates stored in such a way – with a great deal of attention to preserve the plate's polished surface – came directly from the manufacturers and were never used. The reasons for this could be multiple; perhaps it was the rust spots, which

developed after the plates were shipped to Talbot and made the surface unusable.

The Talbot Archive also yields crucial information about how the original plates were packaged when they came into Talbot's possession. An example is the presence of one block of plates of the same size (10 × 13 cm), wrapped in thick protective paper as previously described, and tied together by a string (fig. 5). This specific group of twelve plates has probably never been opened since they entered the Bodleian collections, as it is not possible to untie the bundle and access their surfaces without compromising the original wrapping. Complex objects like these raise unanswerable questions about why Talbot preserved them, about the presence or absence of images on the inaccessible surfaces of these plates, and about how we can use such material to shed new light on our understanding of Talbot's photographic work.

Blank plates are indeed a good example of how photographic history can productively engage non-representational visual information. Take, for instance, the 7,5 × 10,5 cm steel plate produced, as the stamp on the verso reveals, by the manufacturers Hughes & Kimber of London (figs. 6a – b).³⁶ Throughout their decades-long business, the manufacturers relocated multiple times, and the address engraved on the stamp, 5 Red Lion Passage, Fleet St, allows us to date the plate between 1856 and 1862. This time frame is compatible with Talbot's experimentation concerning his second photomechanical patent, and Hughes & Kimber were one of his main suppliers. As Talbot recalled in a letter to his cousin Emma Thomasina Llewelyn – who took an interest in Talbot's photomechanical processes and began experimenting herself in the late 1850s – it was not easy to find highly polished steel plates of good quality for engraving.³⁷ In the same letter, Talbot confirmed Hughes & Kimber as his main suppliers, stressing, however, that he was “not quite satisfied” with the surface of their steel plates, probably referring to the fact that



5 Block of 12 steel plates wrapped in paper and tied with a cord, stamp on the verso of Hughes & Kimber, London, 10 × 13 cm. Oxford, Bodleian Libraries, MS WHF Talbot 86

the edges were not bevelled, and the surface not perfectly burnished.³⁸ The issue with sharp edges was that it was more difficult to wipe off the excess of ink, as the edges created a relief and there was a risk the practitioner as well as the paper might get cut when the plates were passed under the printing press.

My interpretation of the reason for Talbot's dissatisfaction with the manufacture of the plates is confirmed by various invoices, from both plate manufacturers and printers, concerning additional costs for burnishing, tarnishing, and bevelling.³⁹ In a letter addressed to Talbot, the engraver and printer William Banks of Edinburgh highlighted how, judging from the stamp on the verso of Talbot's plates (Hughes & Kimber, London), he was searching in the wrong location – that he was, in Banks's words, “in the wrong quarter for steel” – pointing to Sheffield as the “true market for that article” instead.⁴⁰

Another important element to consider is the cost of this material, as steel plates were not cheap. For instance, in the 1850s, a 10 × 15 cm steel plate cost about three shillings, plus one shilling and six pennies for the bevelling. This was a relatively high price in comparison to a dozen 10 × 12 cm copper plates provided by the same sellers for thirteen shillings. Due to the cost of the material, Talbot cleaned off and engraved the plates multiple times. In this regard, particularly



6a – b Verso (a) and recto (b) of a waxed steel plate with bevelled edges, stamp on the verso of Hughes & Kimber, London, 10 × 13 cm. Oxford, Bodleian Libraries, MS WHF Talbot 67

revealing are two invoices from Hughes & Kimber for cleaning off and repolishing, respectively, 64 and 100 steel plates for a total of seven pounds and fourteen shillings.⁴¹ Considering the cost of the plates and their maintenance before and after the engraving, steel plates contributed to making Talbot's photographic engraving a relatively expensive process in comparison to his paper photography, especially in its experimental phase, which was characterised by countless trials.

As we start to see, even if these plates have no images on their surface, they are rich in information concerning Talbot's experimental practice. We can glean further information by considering the plates' material, steel, since it was not a random choice. From Talbot's experimental loose notes and published accounts, we know that, between the late 1840s and 1850s, he experimented with a large variety of supports including glass, porcelain, copper, zinc, and lithographic stone. Each of these materials possessed unique properties and technological implications that significantly influenced Talbot's photomechanical experiments. Steel started to be largely employed in the printmaking industries only during the second decade of the nineteenth century when several technical challenges in its manipulation were overcome.⁴² Indeed, its key property, hardness, was both a limit and a desideratum. If on the one hand steel plates could provide a long run of prints (likely thousands of impressions per plate), on the other it was more difficult to mark their surfaces, both mechanically and chemically. As a consequence, sharper tools and new techniques were developed in the 1820s, such as the 'mixed method' and the 'steel engraving' which combined both engraving and etching techniques. Talbot's use of steel plates appears to be strictly linked with steel's successful application in printmaking, especially for technical works, such as banknotes, which demanded longer print runs, all in high quality. It was probably the combination of the steel plates' physical properties and their commercialisation

within the printing industry that led Talbot to employ them in his photomechanical experiments.

The material of these printing plates seems to have been important to him, as it became a characteristic aspect of his processes. In several entries of his aforementioned loose notes, Talbot named the work-in-progress process "steel engraving" and, later, he even wrote directly about his choice of this material publicly. In a letter to the magazine *Athenæum*, he stated that he did not make use of "soft plates of silver or silvered copper, as in the daguerreotype", but only steel plates so that "there can be no doubt of their durability".⁴³ In a previous letter published by the same magazine, Talbot referred to earlier experimenters who used etching or galvanised daguerreotypes, including Hippolyte Louis Fizeau, Alfred Donné, and Josef Berres.⁴⁴ However, as Talbot pointed out, all three of these men's experiments "had not been found in practice sufficiently successful".⁴⁵ This was partly due to technical factors, such as the softness of silvered copper printing plates, which limited the print run, as well as the quality and level of detail they allowed. For these reasons, plates printed from daguerreotypes were often retouched to enhance details and improve the overall quality of the prints, such as in the case of Fizeau's plates published in *Excursions Daguerriennes*.⁴⁶

Bearing in mind others' previous attempts, Talbot made a clear choice when designing his photomechanical processes, one that reflects how his concept of the 'photographic' translated from photochemical to ink and metal photography. In his experiments with steel plates, he did not employ any manual techniques to correct the image, even when it was defective. His plates were engraved only by the chemical action of several etching solutions of his making, while the image was reproduced through photographic chemistry. In fact, one of the key elements that characterised Talbot's process was that no human hand was involved in the



7 William Henry Fox Talbot, *Apollo Belvedere*, ca. 1852–1858, photographic engraving, steel plate, stamp on the verso of Hughes & Kimber, London, 10.5 × 7.5 cm. Oxford, Bodleian Libraries. MS WHF Talbot 70

making of the photographic image on the printing plate. For this reason, all his plates were untouched by the burin, and most of the prints faithfully reproduced the ‘defects’ of the photographs, something that was often picked up and criticised by period observers, especially professional printmakers.⁴⁷ As the prints of the photogenic drawing and calotype processes were “impressed by Nature’s hand” – to the exclusion of human hands – similarly, photographic and photoglyphic engravings were characterised by the same criterion.⁴⁸ Whether on paper or steel, in Talbot’s work the photographic image was left untouched by any manual intervention that would reveal the hand of a maker.

As we have seen, a closer analysis of materials and ways of making adds an important layer to our understanding of Talbot’s experimental

practice and the kind of knowledge it produced – despite the lack of images. If we look more closely at the surface of a typical “blank” plate (fig. 6a), its recto turns out to be fully covered with wax. And there are good reasons for the presence of wax. As iron is one of the principal components of steel, this alloy is extremely sensitive to rust, which could damage the design to the point of destroying it. It is in fact not uncommon to come across plates with the surface largely covered in rust, making the engraving hard to see. An example are plates described in archival entries “blank” or as impressed with indeterminable subjects (figs. 4, 7–8), which actually reproduce a fern, the Apollo Belvedere, and a building on the Seine. In order to prevent this irreversible chemical damage, steel plates were protected with a coat of wax, which had to be meticulously poured on the surface. The wax layer on the plates’ surfaces is often not uniform, and upon close inspection, brushstrokes and areas where the wax is thinner or thicker are visible, thus highlighting their crafted nature (figs. 4, 6a). Rust on plates (figs. 7–8) not only indicates the chemical damage that occurred over time but also, most likely, Talbot’s own mistake in storing the plates incorrectly, which created suitable conditions for rust to develop. The presence of rust on these plates is therefore a sign of Talbot’s engagement with the material, in this case, a serious mistake that critically compromised the engravings.

Another precaution against rust was wrapping paper (as in figs. 5–6). In another letter to Emma Llewelyn, Talbot admonished her that steel plates “cannot be trusted even a single day, unless well wrapped in dry paper because a rust spot is fatal to them”.⁴⁹ In fact, in addition to wax, steel plates needed to be well wrapped in paper, preferably acid-free, to protect them from chemical and mechanical damage. Talbot’s plates show signs of both correct and incorrect storage. In some cases, residues of newspapers or protective paper stuck to the plate, making its



8 William Henry Fox Talbot, *Buildings on the Seine*, ca. 1852 – 1858, photographic engraving, steel plate, stamp on the verso of Hughes & Kimber, London, 7,5 × 10,5 cm. Oxford, Bodleian Libraries, MS WHF Talbot 71

surface inaccessible and therefore rendering any detection of an engraving impossible. In several cases, we can see only part of the plate's verso, and its recto is completely out of sight. It is possible that the delicate yellow papers were applied by the plates' manufacturers, who knew how to correctly transport and store them, while the newspaper, which often compromised the design on the plate (fig. 8), was Talbot's own doing.

4. Conclusions

The plates in the Talbot Archive offer a rare glimpse into an experimental practice that ultimately diverged from traditional notions of 'success' and did not produce recognisable and

'authorial' images. As I have asserted, Talbot's photomechanical patents never found commercial application within the printmaking and photographic industries. According to Talbot's son Charles, they were regarded by their contemporaries as a "mere scientific curiosity" rather than "an invention of general utility".⁵⁰ However, the photographic and photoglyphic engraving processes have a key role in tracing the evolution of Talbot's concept of the 'photographic' beyond the usual chronology attributed to him – the 1830s through the 1840s. Talbot's extensive research and practical engagement with photomechanical techniques provide valuable insight into the influence of materials on his photographic work, which did not stop in the 1840s with his invention of photochemical

and paper-based photography but evolved in the 1850s into metal and ink photography.

Blank, unused, or damaged printing plates prompt us to reconsider traditional imaged approaches to the history of photography. They highlight the limits of historiographies and methodologies anchored in the analysis of objects as carriers of images, in favour of approaches that consider objects as physical traces of practices and the material culture involved in their making and use. Despite the absence of photographic images on many of the Bodleian plates, they nevertheless provide a crucial material trace of Talbot's experimental photomechanical practice that opens new paths to revisit his photographic work. More specifically, they encourage engagement with the trial-and-error phases of processes, often overlooked in archives and historiographies because they are difficult to trace, especially from a material perspective.

Clear examples of the challenges in locating and studying this kind of material addressed in this article include the long-term misplacement of the Bodleian plates and the physical separation between experimental loose notes and plates across several archives. It is indeed crucial to note that the majority of the plates discussed here were not in the archive for a long time but in an old oven and, therefore, unknown. Their acquisition by the Bodleian Libraries and entry into the archive in 2014 marked a collective acknowledgment of the value of this material, which, however, was not reflected in scholarly engagement, probably because the plates did not display discernible images and therefore lacked a clear link to Talbot's photographic work. Consequently, their value was mostly linked to the historical relevance of their original owner, Talbot, rather than to their epistemological potential in shedding light on two under-researched photomechanical processes, which remain largely undetected in the archival description. The challenges in studying complex materials like

these plates often result in an apparent 'archival absence', further amplified by the material fragmentation of a practitioner's legacy in several archives and the lack of historiographical engagement and suitable archival descriptions that could provide an appropriate context for identifying experimental material and integrating it into broader histories of photography.

Talbot's case provides a signal example of the need to challenge fixed narratives and standard historical assessments of well-known protagonists in photographic history and how this reassessment shall start right from a close examination of overlooked archival material. In particular, it is essential to give more scholarly attention to practices and experiments labelled as 'failures', or perhaps even as not 'photographic', that are in fact critical to understanding what informed a practitioner's research and how their work progressed over time. What at first seems to be simply 'blank' in fact offers multiple levels of information and productive suggestions when read beyond the tendency to prioritize pictorial representation. The Bodleian plates highlight the significance of engaging unused or working materials within the context of Talbot's photomechanical experiments and, more broadly, photographic history, making space for the study of objects that do not embody 'successful' practices.

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- 1 See the description of MS WHF Talbot 61–87 in the Bodleian Libraries database: URL: https://archives.bodleian.ox.ac.uk/repositories/2/resources/2715/collection_organization (last accessed 22 March 2025). There is a limited number of publications dedicated to Talbot's photomechanical experiments; among the most recent studies are Larry J. Schaaf, 'The Caxton of Photography': Talbot's Etchings of Light, in: Mirjam Brusius, Katarina Dean, and Chitra Ramalingam (eds.), *William Henry Fox Talbot: Beyond Photography*, New Haven and London 2013, 161–192; Geoffrey Belknap, *The Print After Photography: Talbot and the Invention of the 'Photographic' Print*, in: *Nineteenth-Century Contexts* 42, 2020, no. 2, 221–241; Francesca Strobino, *Investigating William Henry Fox Talbot's Experiments in Photomechanical Printing*, PhD dissertation, De Montfort University, Leicester 2024.
- 2 Photographic engraving, patent no. 565, titled *Improvements in the Art of Engraving*, filed 29 October 1852, finalised 24 January 1853; photoglyphic engraving, patent no. 875, titled *Improvements in the Art of Engraving*, filed 21 April 1858, finalised 14 October 1858. On the Talbot-Klič process, see Johan DeZiete, *A Manual of Photogravure: A Comprehensive Working Guide to the Fox Talbot Klič Dust-Grain Method*, Haarlem 1988.
- 3 As of today, 392 plates have been located. Further details on these plates, and in particular on the Talbot photomechanical collection in the National Science and Media Museum, can be found in Strobino 2024 (as in note 1), 137–216. Further collections of Talbot's printing plates can be found in the Royal Photographic Society collection, Victoria and Albert Museum, London, and the Fox Talbot Archive, Bodleian Libraries, Oxford.
- 4 MS WHF Talbot 61–87, Oxford, Bodleian Libraries. On the purchase of the Talbot Archive from Petronella Brunett-Brown in 2014, see Mary Pelletier, Hans P. Kraus, Jr: An Interview, in: *The Classic*, no. 10, 2023, 62–75, here 73–74, URL: <https://www.sunpictures.com/news/hans-p-kraus-jr-an-interview> (last accessed 22 March 2025).
- 5 The plates were discovered by Talbot's heirs and identified as part of Talbot's photomechanical practice thanks to the assistance of Hans P. Kraus Jr., Larry Schaaf, and Roger Taylor. For further information, see Strobino 2024 (as in note 1), 18–19; Pelletier 2023 (as in note 4), 73–74.
- 6 Mirjam Brusius refers to the creation of Talbot's persona in her keynote lecture "Imperial Talbot? The Canon of Photography in the Age of Decolonization" (A *New Power* symposium, Bodleian Libraries, Oxford, 18 March 2023).
- 7 Brusius, Dean, and Ramalingam 2013 (as in note 1).
- 8 Geoffrey Batchen, *The Forms of Nameless Things*, Oxford 2022, 59–76, here 59.
- 9 Ibid., 62–63.
- 10 Elizabeth Edwards and Janice Hart, Introduction: Photographs as Objects, in: eadem (eds.), *Photographs, Objects, Histories*, London 2004, 1–15, here 2.
- 11 Of particular relevance for this topic were the conferences *De/Reconstructing Photomechanical Reproduction* (9–10 September 2021, organised by the Royal Photographic Society and the University of the West of England in Bristol, UK) and *Photomechanical Prints: History, Technology, Aesthetics, and Use* (31 October–2 November 2023, organised by the American Institute for Conservation at the National Gallery of Art, Washington, DC).
- 12 A different approach informs the work of the science historian Omar Nasim, who looks into the making of visual material (such as nebulae drawings) as a critical site to understand scientific practices (such as astronomical observation). See Omar Nasim, *Observing by Hand*, Chicago 2014.
- 13 In recent years, there has been a growing interest in exploring the history of photography through its various forms of 'failure', encompassing technological and institutional aspects alike. See Kris Belden-Adams (ed.), *Photography and Failure: One Medium's Entanglement with Flops, Underdogs and Disappointments*, London 2021.
- 14 Norton Wise, Making Visible, in: *Isis* 97, 2006, 75–82; Pamela H. Smith, Amy R. W. Meyers, and Harold J. Cook (eds.), *Ways of Making and Knowing: The Material Culture of Empirical Knowledge*, New York 2017.
- 15 For Talbot's biography, see Harry John Philip Arnold, *William Henry Fox Talbot: Pioneer of Photography and Man of Science*, London 1977. For a more in-depth look into his many research interests, see Brusius, Dean, and Ramalingam 2013 (as in note 1).
- 16 There is a vast literature dedicated to the study of Talbot's photochemical work. See, for instance, Hubertus von Amelnunxen and Michael Gray (eds.), *Die aufgehobene Zeit: Die Erfindung der Photographie durch William Henry Fox Talbot*, Berlin 1988; Larry J. Schaaf, *Out of the Shadows: Herschel, Talbot, & the Invention of Photography*, New Haven and London 1992; id., *The Photographic Art of William Henry Fox Talbot*, Princeton and Oxford 2000; Geoffrey Batchen, *William Henry Fox Talbot*, London 2008; *William Henry Fox Talbot and the Promise of Photography* (exh. cat. Pittsburgh, Carnegie Museum of Art), ed. by Dan Leers and Larry J. Schaaf, Pittsburgh 2017; Geoffrey

- Batchen, *Inventing Photography: William Henry Fox Talbot in the Bodleian Library*, Oxford 2023.
- 17 Larry J. Schaaf, *Talbot and Photogravure* (Sun Pictures, vol. 12), New York 2003.
 - 18 Talbot published written accounts of the photographic and photoglyphic engraving processes in two journals, the *Athenæum* and the *Photographic News*. See William Henry Fox Talbot, Photographic Engraving, in: *Athenæum*, no. 1331, 30 April 1853, 532–533; id., Description of Mr. Fox Talbot's New Process of Photoglyphic Engraving, in: *Photographic News* 1, 22 October 1858, no. 7, 73–75.
 - 19 Talbot 1853 (as in note 18), 532–533.
 - 20 Ibid.
 - 21 Talbot 1858 (as in note 18).
 - 22 The term “practical hands” comes from a letter by George Barclay to Talbot, 4 May 1853 (transcribed in *The Correspondence of William Henry Fox Talbot*, Talbot, project directed by Larry J. Schaaf, which hosts ca. 10,000 letter transcriptions, URL: <https://foxtalbot.dmu.ac.uk/project/project.html>, doc. no. 6768 [last accessed 23 March 2025]).
 - 23 See, e.g., Schaaf 2003 (as in note 17); Schaaf 2013 (as in note 1); and Belknap 2020 (as in note 1).
 - 24 Some photographic and photoglyphic engraving prints are held in the Talbot Archive without being related to any of the metal plates present in the same archive.
 - 25 Inventory description at URL: https://archives.bodleian.ox.ac.uk/repositories/2/archival_objects/38734 (last accessed 24 June 2024).
 - 26 Antony Griffiths, *The Print before Photography: An Introduction to European Printmaking, 1550–1820*, London 2016, 132–143.
 - 27 Letter from Talbot to Elisabeth Theresa Feilding, 27 May 1808, transcribed in *The Correspondence of William Henry Fox Talbot* (as in note 22), doc. no. 492. See Larry J. Schaaf, A Broader View of Talbot (posted 22 May 2015), in: *ibid.*, URL: <https://talbot.bodleian.ox.ac.uk/2015/05/22/a-broader-view-of-talbot/> (last accessed 12 February 2024); Mirjam Brusius, Beyond Photography: William Henry Fox Talbot's Notebooks in the Talbot Collection at the British Library, in: *Electronic British Library Journal Article* 2010, no. 14, 1–31, here 3, URL: <https://doi.org/10.23636/962> (last accessed 23 March 2025).
 - 28 Mirjam Brusius and Chitra Ramalingam, Beyond Photography, in: Brusius, Dean, and Ramalingam 2013 (as in note 1), 1–24, here 1.
 - 29 Letters are transcribed in *The Correspondence of William Henry Fox Talbot* (as in note 22), while circa 25,000 prints and negatives are available for consultation on the *Talbot Catalogue Raisonné* hosted by Oxford's Bodleian Libraries (URL: <https://talbot.bodleian.ox.ac.uk/>), and about 360 notebooks are catalogued and accessible through the manuscript catalogue of the British Library (catalogue link no longer available following the cyberattack that took place in October 2023).
 - 30 Two exceptions, that however were not commercial operations for Talbot, were the publication of seven of his glyphs in the *Photographic News* (1858) and the collaboration with the astronomer Charles Piazzi Smyth to illustrate his report of the Tenerife expedition (1858).
 - 31 Nasim 2014 (as in note 12).
 - 32 Brusius 2010 (as in note 27); Larry J. Schaaf, *Records of the Dawn of Photography: Talbot's Notebooks P & Q*, Cambridge 1996.
 - 33 Kelley Wilder, Photographs, Science and the Expanded Notebook, in: *Umění/Art* 70, 2022, no. 3, 279–289.
 - 34 See Strobino 2024 (as in note 1), 166–175.
 - 35 The many prints and printing plates related to this latter part of Talbot's experiments in photomechanical printing, most of which are held in the NSMM, have still to be investigated.
 - 36 For further information on Hughes & Kimber's business, see Jacob Simon, *British Artists' Suppliers, 1650–1950*, National Portrait Gallery website, URL: <https://www.npg.org.uk/collections/research/programmes/artists-their-materials-and-suppliers/> (last accessed 20 June 2024).
 - 37 See the transcription of the letter dated 30 October 1858 in *The Correspondence of William Henry Fox Talbot* (as in note 22), doc. no. 10056.
 - 38 Ibid.
 - 39 Invoices, D&G GREIG., Add MS 88942/4/1/12, doc. no. 33361; Add MS 88942/4/1/12, doc. no. 34593, British Library London.
 - 40 See the transcription of the letter dated 15 March 1860 in *The Correspondence of William Henry Fox Talbot* (as in note 22), doc. no. 8055.
 - 41 Invoices, Hughes & Kimber, Add MS 88942/4/1/12, doc. no. 35221; Add MS 88942/4/1/12, doc. no. 35220, British Library, London.
 - 42 See Ad Stijnman, *Engraving and Etching, 1400–2000: A History of the Development of Manual Intaglio Printmaking Processes*, London 2012, 131–256 (“Producing the Matrix”).
 - 43 See the transcription of the letter dated 11 April 1853 in *The Correspondence of William Henry Fox Talbot* (as in note 22), doc. no. 6754. Published as William Henry Fox Talbot, Photographic Engraving, in: *Athenæum*, no. 1329, 16 April 1853, 481–482.
 - 44 Dated 4 April 1853, transcription in *The Correspondence of William Henry Fox Talbot* (as in note 22), doc. no. 6749. Published as William Henry Fox Talbot, Photographic Engraving, in: *Athenæum*, no. 1328, 9 April 1853, 450. For further reading on this topic, see Steffen Siegel, *First Exposures: Writings from the Beginning of Photography*, Los Angeles 2017, esp. 329–356 (on Alfred Donné); Petra Trnkova, Electrifying

Daguerreotypes: On Correlations between Electricity and Photography Around 1840, in: *History of Photography* 45, 2021, no. 2, 111 – 127; Martin Jürgens, Ioannis Vasallos, and Lénia Fernandes, Joseph Berres's Phototyp: Printing Photography in the Service of Science, in: *The Rijksmuseum Bulletin* 66, 2018, no. 2, 144 – 169; Magdalena Pilko et al., Electrotyping Daguerreotypes: The Reconstruction of an Early Reproduction Technique, in: *Topics in Photographic Preservation* 18, 2019, 151 – 164; Martin Jürgens, *Redefining the Origins of Photomechanical Printing: Etching, Electrotyping and Multiplying Daguerreotypes in Europe from 1839 to 1860*, PhD dissertation, PHRC, De Montfort University, in progress.

- 45 *The Correspondence of William Henry Fox Talbot* (as in note 22), doc. no. 6749.
- 46 Noël-Marie-Paymal Lerebours, *Excursions Daguerriennes: Vues et monuments les plus remarquables du globe*, Paris 1840 – 1842.
- 47 See, for instance, the transcription of Barclay's letter dated 8 April 1853 in *The Correspondence of William Henry Fox Talbot* (as in note 22), doc. no. 6752.
- 48 See William Henry Fox Talbot, *The Pencil of Nature*, London 1844, n.p. ("Introductory Remarks").
- 49 See the transcription of the letter dated 2 November 1858 in *The Correspondence of William Henry Fox Talbot* (as in note 22), doc. no. 7726.
- 50 Gaston Tissandier, *A History and Handbook of Photography*, London 1878, 377.