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Photomechanical Prints: History, Technology, Aesthetics, and Use

Program

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Abstracts and Speaker Biographies

The Presence and Absences of Photomechanical Prints

The photomechanical print plays a significant role the history of photography, and the collections of images that have made this history. The development of photomechanical processes, and the output of visual content of mechanically printed photographs rivals, if not exceeds, the development and use of chemical photography in the 19th and 20th centuries. Niepce and Talbot, for example, were as interested in printing as they were in photochemistry. Yet, canonical histories of photography have traditionally focused on the development of chemical processes, with photomechanical images often mentioned as a footnote to this history.
This presentation asks what happens to this narrative of the history of photography, when we look side by side at the histories of photography and the photographic collections that have been used to create these histories. The presentation will trace the role of the photomechanical image in the histories of photography, from Eder to the Gernsheims and Newhall, before looking at how contemporary scholarship is rethinking the role of the photomechanical image. Alongside this, we will also explore how photomechanical prints and technologies have been collected and rationalised in formal museum collection, from the National Science and Media Museum to Eastman Museum to the Harry Ransom Centre.

The goal of this presentation will be to think across histories and collections, to understand the presence and multiple absences of the printed photograph in the way that we have constructed the history of photography. It will also attempt to draw some conclusions about how these narratives have shaped the boundaries of photographic history and the consequences this has had to how we see the broader implications of photographic objects.

Dr. Geoffrey Belknap is Keeper of Science at Technology at National Museums Scotland. He is a historian of photography, science and visual culture in the 19th century and a museum professional with particular interests in participatory practice and digital humanities. Between 2017-2022 he was Curator of Photography and Photographic Technology, and later Head Curator, at the National Science and Media Museum (NSMM). Before joining the museum sector, he was a post-doctoral researcher on the Darwin Correspondence Project at Harvard University and on the AHRC Large Project 'Constructing Scientific Communities: Citizen Science in the 19th and 21st Centuries' at the University of Leicester and Natural History Museum. He has published articles and chapters in journals and edited volumes in the history of science, photography and visual culture, including *Nature*, the *British Journal for the History of Science* and *History of Science*. His first monograph, *From a Photograph*, was published in 2016 with Bloomsbury Press on the history of photography in 19th century periodical publications. He has appeared in print, TV and Radio media, including the recent BBC 4 serial broadcast *The Art of Innovation*.

Illustration, Race, and Photomechanical Imagery

Illustrators and various printing processes played a dominant role in the construction of race in the United States. Historically, illustrations were powerful and significant persuasive vehicles that helped create perceptions of people. The imagery culturally separated Asians, Blacks, and Native Americans from Whites through various print media.

Communication through text and the illustrated image progressed in the nineteenth century. As a result, it was bound to advancements in printing, from copper plate etchings and woodcuts to offset printing. Popular ideas of race in the United States accompanied these advancements in the second half of the 19th century, along with the coast-to-coast expansion of the postal system's circuit. Prominent printmaking firms like Currier and Ives and publications such as Frank Leslie's Illustrated Newspaper and Harper's Weekly employed illustrators and printers to create narratives on racial subjects to increase circulation. The illustrated papers were the most popular and cheapest way to provide images to mass audiences before the perfection of the halftone process enabled the printing of photography in the early 1890s. Illustration remained the vital vehicle for storytelling and delivering ideas to the public well beyond the advent of print photography.

The visibility of diverse imagery is crucial in constructing social perceptions, cultural awareness, and image representation. Illustrators have visually responded to events, attached their perceptions, and have reflected and "constructed" people, places, and things in America, while simultaneously shaping race and cultural perception in challenging and controversial ways. Each illustrator maintains their stylistic integrity and infuses their visual forms with perspectives and biases of life as they see it. Illustrators have used their points of view to influence the identity of their cultural group and others. Illustrators control what is fact and fiction in their visual storytelling, thus the power of persuasion.

In the Southern states in the early twentieth century Jim Crow Laws, lynching, and mob violence became unbearable to hundreds of thousands of Black people. As a result, they migrated north to pursue better jobs, education, and living conditions. Out of this exodus, Black artists, writers and musicians used black-owned newspapers and publications such as The Negro World, The Crisis, and Opportunity Magazine to explore Black identity, counteract negative images created by Whites in print, and fight racial injustice. The historical relationship between race, print media and photomechanical processes are intricately linked.

This provocative narrative history was highlighted and explored in the exhibition, *Imprinted: Illustrating Race*, which was on view at the Norman Rockwell Museum in 2022 and scheduled for travel in 2024. The exhibition examined the role of published images in shaping attitudes toward race and culture in over 300 artworks and objects produced from as early as 1590 to today. The exhibition used newspapers, poster advertisements, trade cards, and others created with photomechanical processes to explore stereotypical racial representations imprinted upon us through the mass publication of images. It culminates with contemporary imagery that has shifted the cultural narrative by creating positive and inclusive imagery.

Robyn Phillips-Pendleton is a professor of Visual Communications in the Department of Art and Design at the University of Delaware. She recently served as Interim Director of the MFA in Illustration Practice program at Maryland Institute College of Art. She is a visual storyteller who has exhibited her visual work internationally, a designer, lecturer, curator, and a United States Air Force Artist. Phillips-Pendleton is a Norman Rockwell Museum Board Trustee, a member of the New York's Society of Illustrators Board of Directors, and the Board of Directors of the ICON 12 Conference. She has spoken widely on the history of illustration and the influence of published imagery on perceptions of race. Robyn's essay, "Race, Perception, and Responsibility in Illustration," appears in *A*

Companion to Illustration, edited by Alan Male, John Wiley & Sons, Inc. 2019. Her illustrated picture book is *Homework for Breakfast*, and she co-curated the “Imprinted: Illustrating Race” exhibition at the Norman Rockwell Museum in June 2022.

The Photomechanical Print as Facsimile in the Early 20th Century

This paper will focus on photomechanical prints created as facsimiles of works on paper and the class implications inherent in their reception in the 1930s and 40s by critics, curators, and art historians. Reproductions and facsimiles embody the tense relationship that persists to the present day between the elitist idealism inherent in the conceptualization of the first U.S. museums in the nineteenth century, which sought to elevate and educate through the influence of high culture, and the commercialism associated with the middle classes that was necessary to further those aims through the proliferation of mass-produced images for the home. This conflict as it played out in the early 20th century is perhaps best exemplified by the "Facsimile Debate," an essay series featured in the journal Der Kreis in reaction to the 1929 exhibition "Original und Reproduktion" at the Kestner Gesellschaft in Hannover, where the most technologically advanced photomechanical reproductions were hung next to original works, challenging viewers to discern the difference. The responses by a number of important critics and scholars are illuminating; both the objections and the proposed solutions to the prospect of facsimiles being seen in a museum setting lay bare the provocation photomechanical reproductions represented toward the status of art and more importantly, the gatekeepers of that status. The association of facsimiles with mass consumption, beginning with the proliferation of chromolithographs in the nineteenth century, certainly played a role in the anti-democratic reaction to their propagation, but key to this discussion is the amount of subjectivity involved in the ostensibly objective process of reproducing a work via photomechanical matrix.

The essay that most clearly pinpoints this issue as the locus for discomfort is "Original and Facsimile Reproduction," by Erwin Panofsky, which proposes a solution of somehow totally mechanizing the reproduction process, thus eliminating the question of the maker's identity. This paper will discuss in technical terms various examples of photomechanically printed facsimiles to examine how the typically working-class producer of these prints would have transcended the "mechanical" aspect of reproduction, thus intruding on the domain of the upper class of museum professionals and critics as the mediators of the intention and value behind works of art. This aspect of the subjectivity inherent in the photographic or photomechanical eye has been much discussed in philosophical terms, but as this paper will present, it had major implications for the class hierarchy embodied by the museum as social institution. A previous paper I recently published in the Metropolitan Museum Journal titled "Facsimiles, Artworks, and Real Things" (2021) discusses many of the concepts grounding this proposed paper, but while the previous paper focused on hand-made facsimiles, here I will explore in depth the photomechanical processes for image reproduction, which in many ways had greater reach and relevance for early 20th century audiences.

Rebecca Capua is a Conservator in the Sherman Fairchild Center for Works on Paper and Photograph Conservation at the Metropolitan Museum of Art, which she joined in 2009. She graduated from the NYU-IFA Conservation Center. Her research has focused on printmaking within the circles of Japonisme in the United States and Europe, as well as on philosophical and historical issues surrounding facsimile display in museums.

Johann Carl Enslen and the Nascent Photomechanical Print

Among the many unusual pioneers of photography, the German Johann Carl Enslen (1759–1848) certainly counts among the most unusual ones. During his long life, he pursued various interests: He was active as a travel painter, showman, panorama designer, and aviation pioneer, among other things. In 1839, just a few weeks after the first public news circulated about the Daguerre's and Talbot's photographic processes, Enslen was already experimenting with producing photographic images. Without being an inventor himself, however, he achieved particularly remarkable results. For this reason, his photographs still form part of relevant compendia dealing with the medium's early days. In most cases, Enslen plays the role of curiosity. At the age of eighty, thus being a relatively older person, his explorations of Talbot's Photogenic Drawings are usually interpreted as a visual play with the new medium. His visual solutions––showing astonishingly picturesque compositions––only seem to confirm such an interpretation. What remains unmentioned here, however, is that Enslen had already been working intensively on the physical characteristics of light for many years. He even dedicated a separate publication to this topic as early as 1834––a second book dealing with the same subject followed in 1841. In my paper, I want to put Enslen's photographic experiments in the context of scientific research. His professional activities as an artist and showman suggest an aesthetic reading of these images. But as playful as his images may look to our contemporary gaze, they were the result of an exploratory interest in light at the time of their creation. When reading Enslen's treatises, it becomes clear how decisively interested he was in a practical understanding of light in everyday life and how he thought about applications of this physical phenomenon. I want to propose a new reading of Enslen's paper-based photography. They form a practical reflection on the possibilities of photomechanical reproduction. Without using a camera, that is, always following the path of the photogram, he has repeatedly tested in different variations the options of using light as an agent for reproduction. Photosensitive papers become the site of a sample that subjects various elements to the test of photomechanical replication. Without Enslen himself having made any economic profit from this, he can nevertheless be considered a pioneer in thinking about photography as an instrument of replication.

Steffen Siegel is Professor of Theory and History of Photography at Folkwang University of the Arts, Essen (Germany) where he leads the M.A. program Photography Studies and Research and the doctoral program in Theory and History of Photography. Siegel is a prolific author and editor whose works include *First Exposures, Writings from the Beginning of Photography*, The J. Paul Getty Museum, Los Angeles 2017 and "Circulating Photographs," Special Issue of *History of Photography* 45 (2021), No. 1, (as co-editor). He is the recipient of prestigious awards and fellowship such as the DGPh Research Prize for the History of Photography 2014, the Special Prize Humanities International 2017, and the National Gallery of Art's CASVA in 2019–2020. In 2021, Siegel authored, "Nicephore Niepce and the Industry of Photographic Replication" for The Burlington Magazine.

The Converted Daguerreotype: A proto-photomechanical printmaking process

We are all aware of the daguerreotype's usual place in the history of photography: that of the first commercially successful photographic process, which gave us unique, shiny images on metal plates. We have also been taught a comprehensive history of photomechanical printing, which begins with Nicéphore Niépce's héliographie and then jumps, after an interval of 20 years, to the photogravure, the collotype and the many ensuing processes. The daguerreotype has hardly played a role in the photomechanical story, and while contemporary discussions do occasionally explore the subject, they often reiterate technical details derived from texts, not so much from the historical objects themselves. Typically, only a handful of inventors are mentioned as experimenting with relatively unsuccessful processes, and precise details are usually omitted.

However, at least 60 practitioners practised methods of converting daguerreotypes into plates for printing multiple images in ink on paper between 1839 and 1860. The plates were etched, engraved, electroplated, or electrotyped, or the image was transferred in gelatine or cast in plaster. Regrettably, objects found so far in collections have been inconsistently catalogued due to our insufficient identification skills. This has resulted in a lack of knowledge of the different forms of daguerreotype conversion and the actual surprising abundance of historical artefacts in collections.

To address this situation, my research explores the multiplication of daguerreotype images during the first twenty years of photographic practice. It has become clear that early practitioners such as Alfred Donné, Joseph Berres, Hippolyte Fizeau and Alphonse Poitevin recognised that the daguerreotype formed an ideal starting point for direct printing, since, just as with a traditional printing plate, its image is made up of a physical microtopography on an otherwise smooth, hard surface. This surface had to be converted into either an intaglio or a relief image to function within the common printing traditions. It is becoming more clear that, in its converted state, the daguerreotype set the stage for the later photogravure, photolithography, and relief printing.

This talk aims to encourage us to give the converted daguerreotype a more prominent place in the history of photomechanical printing. It will focus on the fundamental mechanisms of printing from daguerreotypes and address our current lack of detailed knowledge of the materials and processes. Importantly, the talk will also deliver quantitative statistics on 19th-century practitioners and actual objects that have survived until the present day. Tips given on the identification of converted daguerreotypes and their prints will hopefully lead to more of these incunabula of photomechanical objects being located in archives, museums, and private collections worldwide.

Martin Jürgens is conservator of photographs at the Rijksmuseum Amsterdam. Before coming to the Netherlands for this job in 2010, he worked as a conservator in private practice in Hamburg, Germany, for nine years. He studied photography and design in Germany in the 1990s, then participated in the Certificate Program in Photographic Preservation at the George Eastman House in Rochester, NY. He received an M.S. from Rochester Institute of Technology and an M.A. in Conservation from Queen's University in Kingston, Canada. His areas of research, publishing and teaching have covered historic and contemporary photography and digital printing. Following a scholarship at the Getty Museum, Los Angeles, in 2006, the Getty Conservation Institute published his book *The Digital Print. Identification and Preservation* in 2009. Martin is currently a part-time doctoral candidate at the Photographic History Research Centre, De Montfort University, Leicester, UK. His PhD topic is the early use of daguerreotypes for printing photographic images in ink on paper.

Glass and the Pattern of Photomechanical Printing

Glass is all but invisible as part of the history of photomechanical printing. And yet, as an integral part of the collotype process, glass must have been deployed in quantities to fulfill the need for interpositives of all sizes. Between 1860 and arguably the 1940s many thousands of these plates were made in service of photomechanical printing in the rapidly expanding art market, in advertising, and in science. It may seem to be a completely expendable stage of the process, and indeed, so few exist that they are now largely invisible. However, the patterning that glass does as a medium, requiring certain handling, care and storage, gives us good reason to study its use throughout printing as well as photography. What can the largely absent plates tell us about the industry of photomechanical printing and its relationship to photographic plate and glass manufacturing? What can the destruction of so many glass plates tell us about photomechanical waste? In this exploratory talk, I will lay out a few parameters for using glass to enlarge the study of the photomechanical printing industry.

Professor Kelley Wilder is Director of the Photographic History Research Centre at De Montfort University. She is the author of numerous books and articles about photography and science, photographic materials, archives and industries. This paper is emerging research that stems from her DFG Mercator Fellowship at Regensburg University, working with Omar Nasim on the project Astronomy's Glass Archive.

Girard and Disdéri: At the birth of the half-tone screen

Amongst the widely diverse processes for the reproduction of photographic halftones already in use in the 1860s, the line screen or dot matrix method was a bit of an outlier. A number of early processes yielded images in ink by either planographic (photolithography) or intaglio (photogravure) but could not be printed simultaneously with type. That a workable solution would come via the line screen was not yet clear.

W.H.F. Talbot was the first to propose the use of a "photographic screen or veil" to add tone to his photographic engravings in 1852 but soon abandoned his experiments when he was unable to source a gauze fine enough for his purposes. Over the next two decades, ten or more researchers experimented with ruled line screens, at least four of which reached commercialisation for a brief period, each time exclusively in the hands of their respective inventors (Von Egloffstein in the USA, Drivet in France, Leggo in Canada and Carleman in Sweden).

One name conspicuous by its absence in the history books until now is Barthélemy Alexis Girard. In May 1863, he founded an etching company in Marseille and, in collaboration with the Parisian photographer and entrepreneur A.A.E. Disdéri, produced the first commercial line-screen system of halftone reproduction in the world. These halftone prints were produced using a mixed method of line screen and aquatint.

Girard was self-effacing while Disdéri, his business partner, was a master of self-publicity. In a promotional album containing 32 specimen prints and titled "Photographies gravées", pride of place is given to a three-quarter length studio portrait of Disdéri. Furthermore, Disdéri signed the rather florid introduction, given an elaborate calligraphic presentation, that gives a general explanation of the new process and its potential applications. Girard never wrote about the process nor attempted to patent it. So the usual secondary sources on the genesis of the process or how it was commercialised are lacking. From the commentary attached to the individual prints in the promotional item, we may conclude that Disdéri's aspiration was to create a significant market for photomechanical art reproductions to rival output in copperplate and lithography.

The first reference to publishing individual prints dates to October 1863 when six were listed "engraved by Girard after Disdéri; Paris, Salmon, printer". In spite of the initial marketing, which offered 24-hour turn-around for creating a printing plate, little more was heard of the process. By comparing Girard's prints to other intaglio halftones produced by Van Egloffstein and Drivet, it is clear that Girard's output exhibits a more obvious line screen pattern; Girard's strict 90° placement of screens to the vertical and horizontal results in a highly mechanical appearance. Aesthetically, the Girard process was still experimental work-in-progress, producing an overall grainy and grey effect at odds with the crisp outlines halftones of an albumen print. And, rather puzzlingly, all the final prints, both in the sampler album and known individual prints, had not been corrected for inversion during the printing process.

The transition from start-up to commercial production was clearly less simple than Disdéri claimed. Girard's initiative failed within a year, no doubt due to a combination of operational, aesthetic and financial factors. Disdéri's business fell into administration in September 1864, sounding the death knell for what was, when all is said and done, the very first attempt at commercialising a workable line screen halftone process.
Steven F. Joseph (speaker) is an independent scholar of photo history and author of numerous articles and books on nineteenth-century photography in Belgium. He also researches the application of photography to book illustration and early photomechanical printing processes. His collection of some 2000 pre-1900 photographically illustrated books was acquired by the Rijksmuseum, Amsterdam in 2001.

David A. Hanson (co-author) is a retired professor of art at Fairleigh Dickinson University in Teaneck, NJ. He has been researching and publishing on the history of

photomechanical reproduction for many years. The David A. Hanson Collection of the History of Photomechanical Reproduction, housed in the library of the Sterling and Francine Clark Art Institute, Williamstown, MA, documents the development of photomechanical printing from 1826 to the early twentieth century.

Connecting the Dots: Understanding the photographic halftone

The photographic halftone suffers from one of the most extreme cases of what scholar Jennifer Roberts terms the “double invisibility” of print. That is, it is simultaneously obscured by a perceived technical barrier to comprehension, and overlooked due to its ubiquity in our aesthetic environment. Yet, it remains the base visual unit of printed matter—it is one of the key vehicles which created the photographically-saturated world of the twentieth century. Given this paradoxical omnipresence and invisibility, general histories of printmaking and photography have equally disregarded the photographic halftone as worthy of dedicated attention. This denial of visibility is furthered in museum and library collections where untold amounts of halftone images hide in plain sight through vague or miscategorized cataloging data. The irony is that nearly every printed image in the majority of illustrated books, journals, newspapers and magazines is a halftone. In this paper I advance a framework for what the photographic halftone is, focusing on how it is made and probing the terminology. Correspondingly I argue that it is fundamentally distinct from its regularly-conflated cousin, the Ben Day dot (also known as mechanical tints or rapid shading mediums). While they exist simultaneously along a continuum, I consider mechanical tints as representing the end of one mode of practice, and photographic halftone signifying the start of another.

This paper is adapted from my larger dissertation project exploring the technical development of the photographic halftone in the late nineteenth century and its cultural and artistic significance into the twenty first century. I bring to my project a practitioner’s knowledge of both photography and printmaking in conjunction with an art historical and historiographic understanding of the fields. The study and interpretation of the category of photomechanical prints has been perennially hampered by murky terminology. As with many photographic and printmaking techniques, a single term is often used to identify an image’s medium in the name of clarity. Yet in numerous cases the creation of an image is the result of a series of processes that don’t necessarily leave a material trace on the final object. What is missing is a foundational understanding of how to interpret and apply the terminology. This is where a thorough knowledge of process and technique, together with instrumental analysis and characterization are vital. The framework I propose in this paper clearly articulates the photographic halftone process and a structure to differentiate overlapping terminology. After accomplishing this, separating the photographic halftone from the Ben Day dot is paramount, as the two are habitually confused and misidentified. These two approaches to conveying tonality share a similar chronological scope of development and both address a shared printing constraint. However, I argue the two processes denote discreet relationships within my expanded structure. The photographic halftone is a distinct departure; not an additive layer of mechanized marks but rather an optical translation. This paper explores the terminology and categorization necessary to begin filing this prominent gap in the field.

Benjamin Levy is a Ph.D. Candidate in the Joint Program between Case Western Reserve University and the Cleveland Museum of Art. His dissertation in progress is titled “A Gray Area: The Technical and Aesthetic Development of the Photographic Halftone.” He curated the 2022-2023 exhibition “Photographs in Ink” at the Cleveland Museum of Art. Levy is the Assistant Curator of the Putnam Collection, Case Western Reserve University. Prior curatorial positions include Assistant Curator for Collections & Academic Programs at the Henry Art Gallery, University of Washington, Curatorial Assistant in the Department of Prints, Drawings & Photographs at the Baltimore Museum of Art, and Co-Director of the 2012 and 2015 Baltimore Contemporary Print Fairs. He sits on the National Advisory Board for the Tamarind Institute, University of New Mexico. A graduate of the Maryland Institute College of Art, Levy studied printmaking and photography, and trained to be a collaborative printmaker.

Printing Revolution in the Shape of a Picture Postcard: The Iranian postcard publisher, Abdul Rahim Kashani, and his impact on the constitutional revolution

During the Constitutional Revolution (1905-1911), Iran's first revolution, which is now overshadowed by the revolution of 1979, both men and women took to the streets to voice their dissatisfaction with the existing autocratic regime. Photography, which had become available and affordable to the general public for the first time through photographic picture postcards, played a crucial role in this process. Without the introduction of new printing technologies to Iran, such as lithography and especially the collotype, the production and circulation of these revolutionary picture postcards would not have been possible. My talk will zoom in on the publisher Abdul Rahim Kashani, who was at the forefront of the revolutionary movement in Tehran and who later became a member of parliament. Besides participating in protests himself, Kashani printed the majority of the revolutionary picture postcards, while also publishing an illustrated lithographic journal featuring political caricatures. Examining the journal together with the postcards, and paying attention to the printing processes employed, this talks reveals Kashani's understanding of the media's role in revolutionary struggle and his awareness of technological and artistic developments inside and outside of Iran, including the beginnings of celebrity culture in Iran.

Mira Xenia Schwerda (PhD, 2020, Harvard University) is a historian of global modern and contemporary art, visual culture, print and photography. Her book manuscript-in-progress, tentatively titled 'Between Art and Propaganda: Photographing Revolution in Modern Iran (1905-1911),' focuses on the imagery of the Iranian Constitutional Revolution and presents a new history of the visual narratives of political violence brought about by the triad of the telegraph, printing press, and photography. She has previously worked at the Harvard Art Museums, where she curated the photography section of the exhibition *Technologies of the Image: Art in 19th-Century Iran*. Dr. Schwerda has taught courses in the history of photography, Islamic art history, and South Asian art history in the Department of Art History at the University of Edinburgh, and is currently a fellow at the Institute for Advanced Studies in the Humanities at the University of Edinburgh.

A Marvellous Echo: Photomechanical prints at the University of Melbourne

In praising the work of the fine art publisher Braun et Cie, the critic and magazine editor, Gustav Kobbé, stated: 'The exactness of the Braun reproductions of drawings often defies the eye of an expert. The whole series of inks and every shade of pencil are transferred from the originals to the copies by a sort of marvellous echo.' A reproduction of an artwork can be a slippery thing. In the 19th century, engraved reproductions based on paintings had been a lucrative business; the copyright for a painting was sometimes worth twice the cost of the painting itself. And as Bamber Gascoigne points out in his book How to Identify Prints: A Complete Guide to Manual and Mechanical Processes from Woodcut to Ink Jet (2004), it is often impossible to distinguish an original etching from a photogravure.

Prints of pictures were amongst the first examples of art to be brought to Australia, no doubt partly due to the relative convenience of conveying prints halfway around the world compared to oil paintings. The popularity of reproductive prints in Australia was the topic of an 1868 editorial by the Melbourne newspaper The Argus which declared 'we are decidedly of the opinion that good copies of really great works are better than the mass of indifferent originals we possess,' and went on to praise Melbourne's 'mania for copies.' Copies and facsimiles were displayed alongside originals at the National Gallery of Victoria in Melbourne well into the 20th century.

But more particularly, it is the photomechanical reproductions of artwork held at the University of Melbourne's art history department that is the focus of this paper. Housed in the University's Visual Cultures Resource Centre, the prints were used regularly in the teaching of art history and for connoisseurship classes. Most of the exquisite photomechanical reproductions (including those removed from books) were sent from London to the University of Melbourne by the Courtauld Institute of Art. This paper will examine some of the companies and printers that created these works – including the reproductions from the master printer Charles Amand-Durand (1831–1905). Considered a pioneer of the héliogravure process, Amand-Durand's recreations have extraordinary clarity. So exacting were his prints that the Musée du Louvre had Amand-Durand put a printer's mark on his reproductions to overcome any confusion between copy and original. The Centre's collection also holds photomechanical works by Photographische Gesellschaft, Berlin (the Berlin Photographic Company), and héliogravures by the renowned studio of MM. Braun, Clément et Cie. The paper will examine Braun's plates from the 1898 Tableaux anciens de la galerie Charles Ier, roi de Roumanie, a catalogue raisonné compiled by the King of Romania's librarian, Léo Bachelin. Finally, the paper will provide an analysis of the epistemological potential of these reproductions, the taxonomic system that ordered them, the scholars that worked with them, and the way they are used by students at the University of Melbourne today.

Jane Brown is a visual artist and the Director of the Visual Cultures Resource Centre at the University of Melbourne, Australia. The Centre is a rare, conserved resource of historical art images that support the teaching of art history and adjacent fields at the University of Melbourne. Jane also lectures in the history of photography and photography conservation. Jane has an established darkroom practice with an interest in 19th and early 20th Century photographic and photomechanical processes. Her work is in the collections of the National Gallery of Victoria, Art Gallery of New South Wales and the Southeast Museum of Photography, Florida, USA. In 2013 she was recognized with the Art and Australia/Credit Suisse Contemporary Art Award and in 2016 was shortlisted for the Basil Sellers Art Prize. She is currently curating the exhibition 'A Picture Atlas: Art reproductions in the Visual Cultures Resource Centre's photographic collection, University of Melbourne'.

Digital Koehler: Activating a landmark 1892 exhibition collection

The Museum of Fine Arts, Boston, (MFA) is creating a digital archive of historical printing techniques and technology, based on the landmark exhibition “Illustrating the Technical Methods of the Reproductive Arts from the Fifteenth Century to the Present Time, with Special Reference to the Photo-Mechanical Processes,” organized at the MFA in 1892 by Sylvester Rosa Koehler. The great majority of the objects featured in that exhibition—including progressive proofs, rare examples of unusual techniques, and tools—survive in the MFA’s collection, largely uncatalogued and invisible to the public. Supported by a grant from The Paper Project (Getty Foundation), the MFA will launch this on-line resource in early Fall 2023. Koehler (1837–1900) was a key figure in the history of printing, print collecting, and print scholarship in the United States. A printer who had worked with the pioneering lithographer Louis Prang, Koehler was the founding curator of the print and drawing collection at the MFA and served in a similar role at the Smithsonian Institution. One of the guiding lights of the etching revival and the American wood engraving movement, Koehler also had a deep interest in commercial printing, especially in the myriad technologies for color printing and photographic reproduction that emerged in the nineteenth century. His approach, which combined art and industry, old and new, echoed the vision of the founders of many nineteenth-century museums, and established a tradition of interest in process and technique that persists at the MFA to this day. Koehler’s 1892 exhibition, which included more than one thousand items, was intended as a summa of practically all known techniques for fixing ink to paper. The show represented the history of printing, but gave special attention to the huge variety of new nineteenth-century techniques used for color and photomechanical printing. Koehler solicited many works from his far-flung network of friends and colleagues, and included numerous loans from his personal collection. The show featured serial displays that illustrated each stage of the production of a work. The result was a veritable encyclopedia of printing processes. The MFA still owns much of the material from the exhibition, but the majority has remained unphotographed and in many cases uncatalogued until now. Indeed, the rarest material, which documented contemporary print technology and the intersection between printmaking and photography, has remained unstudied since Koehler’s death. This treasure trove contains items that likely exist nowhere else—rare survivors that are doubly valuable for having been gathered systematically, with a clear plan and organizing structure. The resulting digital resource will be both a resurrection of a major early landmark of print scholarship in the United States and a unique online resource for historical printing techniques. Curator Meghan Melvin and paper conservator Annette Manick propose to present a brief summary of the project and to introduce the new digital resource through selected highlights from the exhibition’s extensive section on photomechanical processes, followed by a Q&A session with the audience.

Meghan Melvin joined the Department of Prints and Drawings in 2011 as the first Jean S. and Frederic A. Sharf Curator of Design at the MFA, Boston. A graduate of University College London, and the University of Glasgow, Meghan oversees the Museum’s European and American design drawings, ornament prints, and design archives. Her recent research on Danish illustrator Kay Nielsen heightened her professional interest in the rapid advances in commercial color printing from 1850–1915.

Annette Manick is the Head of Paper Conservation for the Virginia Herrick Deknatel Paper Conservation Laboratory at the Museum of Fine Arts, Boston. Annette graduated from the University of Delaware/Winterthur Art Conservation program with an MS in 1986, finishing the degree with a Fellowship at the Harvard University Art Galleries Center for Conservation and Technical Studies. Annette has strong interest in technical studies, inclusive of a broad range of materials relevant to paper and photographs.

Collecting and the Market for Photomechanical Prints: A panel discussion

Helena E. Wright (moderator), Curator Emerita of Graphic Arts at the National Museum of American History, Smithsonian Institution, Washington, DC, has engaged with many aspects of visual culture during her long career. Her publications, exhibitions, and research interests include the history of printmaking, particularly the development of photomechanical processes, as well as print collecting and women's work in the graphic arts. Her 1988 exhibition and catalogue on the collotype process explored its complex 19th-century patent and business history, and she also connected with contemporary artists using the medium. In essays for the journal *History of Photography* (2001) and the Artefacts consortium publication *Presenting Pictures* (2004), she discussed aspects of the Smithsonian's important holdings of photomechanical works, a foundational collection that began in the 1880s during the curatorship of S. R. Koehler.

David A. Hanson is a retired professor of art at Fairleigh Dickinson University in Teaneck, NJ. He has been researching and publishing on the history of photomechanical reproduction for many years. The David A. Hanson Collection of the History of Photomechanical Reproduction, housed in the library of the Sterling and Francine Clark Art Institute, Williamstown, MA, documents the development of photomechanical printing from 1826 to the early twentieth century.

Mark Katzman is an internationally recognized photographer. Over his thirty-five year career, he has completed assignments for a who's who of advertising and editorial clients including *Smithsonian Magazine*, *The New York Times* and *Der Spiegel*. He is currently the lead global photographer for FedEx. Mark has been named by Luerzer's Archive as one of the 200 best commercial photographers worldwide. His book, *Fires, Fuel and the Fate of 3 Billion*, chronicles the struggle of the energy impoverished in rural India and was published by Oxford University Press in 2013. Mark began collecting photogravures in 1998. Determined to advance appreciation of the under-recognized process and its significance in the historiography of photography, Mark created the award-winning website Photogravure.com, which catalogs his extensive collection and serves as a comprehensive reference for the medium. Mark's own work in photogravure is held in the permanent collection of the Metropolitan Museum of Art, Rijksmuseum, MFA Boston, National Galleries of Scotland, and Bibliothèque nationale de France among others. Mark lives in St. Louis with his wife, Hilary. Together they have three grown children.

Hans P. Kraus Jr. has been established in New York since 1984 as a dealer in nineteenth and early twentieth century photographs. From 1980 to 1983 he worked for Christie's in London and New York. He has represented and placed a number of significant collections, including the Rubel Collection at the Metropolitan Museum of Art, and the Fox Talbot Archive from Lacock Abbey at the Bodleian Library, Oxford. The gallery publishes monographs on early photographers, and catalogues under the series title *Sun Pictures* and occasionally collaborates with contemporary artists who are influenced and inspired by the work and techniques of the earliest photographers.

Patrick Montgomery is an American documentary producer/director and film and photo archivist. He has specialized in making films using archival materials, most notably *The Man You Loved to Hate* (1979) about the legendary actor/director Erich Von Stroheim and *The Compleat Beatles* (1982) a two-hour documentary about the rise and fall of the world's most famous rock group. He also founded and ran Archive Films/Archive Photos, the largest independent commercial film and photo archive in the U.S. until its acquisition in 1997 by The Image Bank, a division of Eastman Kodak. From 2001 to 2019, Montgomery was as a member of the Board of Trustees of The George Eastman Museum in Rochester, NY where he served as Vice Chairman of the Board as well as Chairman of both the Photography Acquisition Committee and the Conservation Committee. Lately he has specialized in building historical image collections, including The Travel Film Archive, The Caribbean Photo Archive, which was acquired by The Art Gallery of Ontario in 2019 and is

now known as The Montgomery Collection of Caribbean Photographs, and The History of Photography Archive.

Serge Plantureux is known as a researcher and dealer of antique books and photography for more than forty-seven years. Born in France, today he is based in Senigalla, Italy, where he initiated a Biennal of Photography History. He has authored and co-authored several publications including Niépce, Daguerre or Talbot?: the quest of Joseph Hamel to find the real inventor of photography (2004), Kiki de Montparnasse, Souvenirs retrouvés. Charles Baudelaire, Photographic Portraits, Gustave Le Gray, Daguerrian Portraits (2012), Edouard Baldus, and auction catalogue of photo engraved metal plates. He currently has a number of blogs on his website, sergeplantureux.blog covering a wide range of topics including new discoveries of Daguerre dessin-fumées and Fizeau's galvanic process. His interest in photomechanical prints is primarily focused on the early years, especially Niepce, Daguerre, Donné, Fizeau and Poitevin.

Never Fade Away: Ernest Edwards and the permanent photograph

On Whit-Monday 1872, a “thronging of thousands of sightseers” packed the south gallery at London’s second annual International Exhibition to watch Ernest Edwards demonstrate his heliotype process, the printing of a photograph in ink on a regular old-fashioned printing press. In the adjacent room Julia Margaret Cameron’s portrait of John Herschel hung side-by-side with Edwards’ framed heliotypes after drawings by Michelangelo, paintings by Correggio and Titan, and engravings by Rembrandt. Cameron’s carbon print was priced at £5, while the heliotypes sold for thruppence. Edwards’ appearance had to be carefully orchestrated so as not to interfere with work on the plates for Charles Darwin’s *Expression of the Emotions in Man and Animals* and the upcoming issue of his heliotyped monthly *Art: Pictorial and Industrial*. Less than ten years since the opening of his first studio, Edwards was, for that moment, the most famous printer in London. Ernest Edwards (1836–1903) transformed everyday lives with the invention of a process to make permanent ink prints from fugitive chemical negatives, creating images of lasting beauty for books, newspapers and magazines, as well as gallery walls. He wasn’t the first or the only one to attempt such printing but he was the one who succeeded in making gelatine process prints viable and sustainable. Edwards’ own remarkable life intersected in surprising ways with the leading artists and writers of the day, first in London, then Boston, and finally in New York City. The Autotype Printing and Publishing Company, the Heliotype Company, the New York Photo-Gravure Company, and the Photogravure and Color Company were a few of the firms he established, collaborating with Darwin, Eadweard Muybridge, William Stillman, Alfred Stieglitz, and other celebrated contemporaries. While reporters of his day declared his heliotype-room “a modern Noah’s Ark, into which everything comes to save itself from destruction by this immortalizing process,” today scant information can be found documenting the successes of this consummate printer/publisher. This presentation is meant to reintroduce his extraordinary achievements to a contemporary audience.

Julie Mellby is graphic arts curator emeritus at Firestone Library, Princeton University. With support from the Printing Historical Society, London, her most recent work has been the documentation of the printer/publisher Ernest Edwards. Selected catalogues and articles include Audubon’s Copperplates for “Birds of America”; The Etchings and Drypoints of B. J. O. Nordfeldt; The True and Honest Story of Lew Ney, Greenwich Village Printer; Victor Prevost: Painter, Lithographer, Photographer; and The Author’s Portrait: O, Could He But Have Drawne His Wit.

Characterization of Collotypes

The collotype has been used as a medium for high-end reproduction of fine art as well as for affordable printing for over 150 years. Due to this wide range of applications, collotypes are easily misidentified and misunderstood. This paper presents research into the characteristics of collotype prints: specifically, how the expression of the technique differs across time, use, and geographic regions. The collotype's defining feature is the reticulation pattern formed during production. Reticulation is a critical step in the preparation of the plate, caused by chemical and/or physical manipulation of the gelatin layer. This creates fine, worm-like channels in the gelatin and produces gradations of ink in a fine, random pattern. Typically visible under moderate magnification, this pattern can change based on production techniques, substrate, layering, and other factors. In this study, known examples of collotypes were characterized and compared using photomicrographs and physical examination. This closer look at the dimensions and morphology of the reticulation pattern provides insight into the collotype's history and aids in the identification and understanding of the medium.

Toshiaki Koseki is the Carol Crow Senior Conservator of Photographs at the Museum of Fine Arts, Houston. He has a M.S. in Art Conservation from the Winterthur Museum/ University of Delaware, which he completed in 1997. He specializes in photographic materials, including the examination and research of techniques; in his role at the MFAH, he also teaches and provides conservation treatment for the museum's photographic collection.

Jennifer McGlinchey Sexton is an independent conservator of photographs and works on paper in Colorado, USA. Trained as a fine-art photographer, Jennifer became interested in conservation as a way to blend her love of art with a curiosity about materials. After getting her graduate degree, Jennifer continued to hone her skills as a conservator and photographer in positions at museums, regional centers, and private practices throughout the United States. Jennifer is a Professional Associate member of the American Institute for Conservation, a peer-reviewed status.

The “Jacomet Process”: An Artful Combination of Collotype and Pochoir

Daniel Jacomet (1894-1966) developed the process, which bears his name and made his printing company famous. The “Jacomet Process” combines two printing techniques: collotype and stencil applied color. The well-known photomechanical collotype process reached its peak in popularity between the 1870s and 1930 by rendering in ink, a “continuous tone” image or design with fine details via a specially prepared reticulated gelatin surface. The hand-applied stencils - referred to by the French term pochoir - were usually executed in watercolor and/or gouache. Combined in the “Jacomet Process”, the collotype and pochoir yielded print reproductions of unequaled fidelity. Jacomet was known for his skillful evaluation of the original artwork and how best to adjust the collotype to accommodate those particular qualities in the final print. The Jacomet studio was highly sought after by established artists such as Pablo Picasso, Georges Braque, Marc Chagall, Georges Rouault, Raoul Dufy, and Juan Miró to reproduce their original drawings, watercolors, and gouaches. The Museum of Modern Art (MoMA) owns two copies of Pablo Picasso’s portfolio, "LeTricorne" (The Three-Cornered Hat), printed by Jacomet in 1920. While best known as a Cubist artist, Picasso collaborated with the Ballet Russes on the design of several productions. Following the success of "Le Tricorne" ballet, Picasso’s dealer, Paul Rosenberg, sought to capitalize on its popularity by issuing a portfolio. The prints represent mostly costume designs for the ballet, which were reproduced from original pencil, gouache and watercolor drawings now housed at the Musée Pablo Picasso in Paris. MoMA’s portfolio consists of thirty-two collotype reproductions, thirty-one of which have pochoir. The portfolio was printed in an edition of 250, with a deluxe edition of 50 copies containing an additional set of collotype prints without pochoir. The deluxe portfolio provides a unique opportunity to compare the collotype only prints with the collotype-pochoir prints. Through examination, it was discovered that Jacomet used techniques to “mute” or soften the collotype ink image to successfully combine it with the pochoir stencil. While the collotype in "Le Tricorne" is printed in black, it should be noted that Jacomet was known to use two or three colors, chosen to be in harmony with the stencil. This paper will present findings on "Le Tricorne" and other works printed by Jacomet, to better appreciate his masterful techniques. The Jacomet print studio, a family business, ceased operation in the early 2000s.

Erika Mosier is a Paper Conservator in the David Booth Conservation Department at the Museum of Modern Art, New York. She joined the Museum as a Fellow in 1992. Prior to taking her current position at MoMA, she was Assistant Conservator at the Yale Center for British Art, New Haven, Connecticut. Mosier received her master’s degree in art conservation from Queen’s University, Kingston, Ontario. She gained experience at the Baltimore Museum of Art, the Queen’s University Archive, and a postgraduate conservation fellowship at the Smithsonian Institution, Conservation Analytical Laboratory. Mosier has undertaken collaborative research on Joan Miró’s collages of the 1920s, published on Odilon Redon’s lithographs, and contributed to the exhibition catalogs for *Gauguin: Metamorphosis and Engineer, Artist, Constructor: The Artist Reinvented*. She is currently collaborating with curators, conservators and conservation science researching works for a Pablo Picasso exhibition in 2023, focusing on his artistic output in the summer of 1921.

Lee Ann Daffner is the Andrew W. Mellon Foundation Conservator of Photographs at the Museum of Modern Art (MoMA). Daffner joined MoMA in 1998 and is responsible for the conservation and preservation of the Museum’s photographic collections, which are to be found in every curatorial department and the Library and Archives. She has worked on over 85 photography exhibitions and supervises and mentors interns and fellows in the David Booth Conservation Center and Department. Before joining MoMA, she held conservation positions at the Metropolitan Museum of Art, Harvard University, the Library of Congress, and the Better Image. She received her MA in art conservation from the University at Buffalo, State University of New York.

Through research and technical analysis of photographs, Daffner promotes materials-based scholarship and the assimilation of this content in curatorial and technical art-history initiatives. She has contributed essays to numerous catalogues and technical articles to peer-reviewed journals. She serves as Associate Editor for the Journal of the American Institute for Conservation (JAIC).

The Woodburytype

The woodburytype was the first photomechanical printmaking technique widely adopted around 1865 and was dominant for about 20 years as a means of reproducing portraits and art images in publications such as books and handbills, as well as used on cabinet cards and the like. It has a tonal range that can be called truly photographic using no method of breaking up the image into binary or on-off sections of ink. The unique capability of the woodburytype is that it is actually a casting method and produces tonal values in relation to a three-dimensional mold. The woodburytype can be thought of as a cast carbon print and often they are indistinguishable to the eye. As the demand for quickly produced images increased because of high-speed rotary presses, the woodburytype fell out of use and by the turn of the century was no longer practiced on a commercial level. It is still unsurpassed in its tonal reproduction. Oliver's presentation will briefly cover the history and development of the technique, a quick technical overview and also the revival of it as a publishing medium with such artists as Matthew Barney and Chuck Close. Both contemporary and historic examples of woodburytype materials and prints will be shown during the presentation.

Barret Oliver runs The *ƒ/Ø* Project the only printmaking and publishing studio focusing on the use of historic photographic techniques. Set up on the model established by June Wayne for Tamarind and adopted by Gemini GEL and countless other studios for making collaborative prints with artists. He has worked with artists as diverse as Michelle Stuart, Spencer Finch and Matthew Barney. He has also done numerous special projects with institutional partners such as the Getty Conservation Institute, The Fine Arts Museums of San Fransisco and the Huntington Library. Oliver is the author of *A History of the Woodburytype* and is the only person in the world to revive this technique in a commercial capacity. Work can be seen at https://f-zeroproject.com/

Ansel Adams: A reproductive aesthetic for photography

Ansel Adams' fame, from the 1970s to the turn of the 21st century, owed a great deal to the scale and high quality of reproduction, through books, of his fine photographic images. He became known at the height of his career for a hard, high-contrast glossy aesthetic which he inherited, and improved upon, from his formative years with the f64 Group of precisionist photographers of California, and this style was perpetuated and refined in the reproduction of his work from the 1940s onwards. But this presentation will show that Adams' background in the pictorialist era furnished him with a softer paper aesthetic and an appreciation of tonal subtleties that remained with him over the years, and that his friend Paul Strand (with whom he shared an important mentor in Alfred Stieglitz) was a crucial influence on Adams' aesthetic values and the choices he would make regarding the printing of his photographs in ink.
Adams' greatest early influence and role model in the art of ink reproduction of photographs was Stieglitz. He brought Adams a strong appreciation of paper and ink, and also showed him the potentials for tonal expression in both gravure and silver gelatin, through his own work and that of other photographers of the Photo Secession whom had reproduced in Camera Work from 1903. Adams' introduction to Stieglitz came from his friend Strand, who had demonstrated to him what effects of sharpness and contrast could be achieved by 1930 through the skilfully exposed and developed silver gelatin negative. This control in the conception of the photograph, was what Adams would later describe as the "score" of the photographic work, but the "performance" of the print – and, I suggest, ultimately the final reproduction print -- would offer him a wide range of aesthetic choices, from the very hard-edged letterpress of Adams' *Sierra Nevada: The John Muir Trail* (1938) to the highest level of gentle tonal gradation by photolithography at the end of his life in *Examples: The Making of 40 Photographs* (1983) and his *Autobiography* (1985).

The contrast between Adams's hard-edged, glossy relief half-tone and Strand's chosen medium of soft, deep gravure was as dramatic as, in printmaking, that between commercial photoengraving and soft ground etching. But as artists they were also two very different cultural products. Strand, born in the late nineteenth century, was raised under the influence of printing as fine art. Adams, on the other hand, came to the ink-printed photograph as a logical expression of the purely photographic qualities expressed in the 'f/64' style of the 1930s, placing a high value on sharpness of contour and light reflections. But 'f/64' also inherited a flavour of Art Deco commerciality which took it into the machine age in comparison to the handcrafted art of photogravure. Adams's relationship throughout his career with forms of reproductive printing for his photographs can be seen as a negotiation between these two aesthetic tendencies.

Dr. Anne Hammond was formerly co-editor with Mike Weaver of *History of Photography* journal (1990-2000), and is now Visiting Research Fellow at the University of the West of England, Bristol, UK. She is the author of *Ansel Adams: Divine Performance* (Yale University Press, 2002), and more recently co-author with photographer/gravurist Norman McBeath of an article "The Photogravure: The Photographic Art in Ink", in *Studies in Photography* (Winter 2018).

The Photograph, the Book, and the Bird-Lover: Producing, circulating, and viewing ornithological photography

In this paper, I will present my research on the history of photomechanically-illustrated Bird Field Guides. In the early twentieth century, as photomechanical processes became prevalent, popular ideas about wildlife and ecology were shaped by photographic books, magazines, and print publications aimed at experts and amateurs alike. By 1933, the top three popular field guides combined had sold close to a million books to the American public, demonstrating the massive circulation and impact of this form of specialized photobook. Bird Field Guides, illustrated with photographs, remain a mainstay of the nature guide industry today. I argue that scientific knowledge and awareness about ecology, wildlife, and conservation was shaped by the history of the twentieth century printing press and the photograph as it evolved through the development of photomechanical printing. The history of ornithological illustration reflects a popular and surprising bias against photography and photomechanical processes. As recently as 1988, scholars have described bird photography as destroying the artistry of the genre, by promoting documentary realism over artistic skill, while decrying bird photography as a tool that led twentieth century ornithology illustrations to become more about identification and appearance rather than capturing the behaviour, habitat, or personality of specific species. Others have argued that while bird photography had its uses in the early decades of the twentieth century, particularly its ability to capture nesting birds, many of the images provided only didactic information rather than contributing aesthetic or scientific insight. This limited appreciation of bird photography does not recognize the important contribution of the photographer to the production of the image, through visual style, technical approach, or intervention in nature. It also ignores the history and evolving technology of photomechanical printing processes and their aesthetic and political role in disseminating ecological knowledge to the masses. I argue that understanding the important relationship between photographic reproduction, the history of the book, and the dissemination of ecological knowledge is necessary to appreciate the full history of photography. Taking a deliberately transnational and comparative approach to the history of bird photography, I am influenced by the understanding of print culture as cosmopolitan and migratory with the ability to shape language, taste, and ideology across national boundaries. Ornithology has always been, and continues to be, a science that transcends physical boundaries, as birds have no respect for the limitations of human geography. Equally, photography has always been a migratory medium, crossing physical boundaries, language barriers, and cultural differences to contribute to a complex shared understanding of the world. Photomechanically-illustrated books and magazines, as objects with histories of circulation far beyond their original intention, reveal the importance of studying the material culture of photography rather than the image alone.

Karla McManus is an Assistant Professor of Art History at the University of Regina, Saskatchewan. Her research focuses on how historic and contemporary environmental concerns are visualized photographically. Karla's ecocritical art history has been published in *Les Cahiers de ARIP*, *the Journal of Canadian Art History*, *Imaginations: Journal of Cross-Cultural Image Studies and Captures*. Figures, théories et pratiques de l'imaginaire, as well as numerous edited collections and exhibition catalogues. In 2019, Karla curated the exhibition *Inside/Outside: Images of the LAND* based on a research residency at Artexte Information Centre, in Montreal, Quebec. She has held research fellowships and grants through the National Gallery of Canada and the Social Sciences and Humanities Research Council of Canada. Karla's current SSHRC-funded research grant explores how bird photography and its history in print has contributed to ecological knowledge and wildlife species conservation. For more see: karlamcmanus.com

Practical hands: WHF Talbot's photographic engraving process through the eyes of the printer George Barclay

Usually, when we think about early nineteenth-century photomechanical practitioners, we envision lonely experimenters, covertly working in their laboratory or workshop, making trials and scribbling notes, until a patent is finally revealed to the world. The reality was much more nuanced. This paper delves into the making of William Henry Fox Talbot's first photomechanical process, the Photographic Engraving (1852), through the lens of the so-called "practical hands" that assisted him. Often neglected by historiographies which privilege author-oriented narratives, printers and engravers played a key role in the making as well as in the designing of new techniques. For the purpose of this paper, I focus especially on the London printer George Barclay and his involvement in Talbot's 1852 process. Through the analysis of correspondence, experimental notes, proofs, and printing plates, I argue that Barclay's practical and tacit knowledge gained through years of practice complemented Talbot's photographic expertise and made up for his lack of experience in printmaking techniques, tools, and materials. The aim is to re-think our approach to early photomechanical processes, moving away from the idea of a single inventor and stretching the investigation to other creative and driving forces involved. By stressing the critical relevance of practitioners' networks, I seek to highlight the collaborative nature of nineteenth-century photomechanical experiments and the different professionals who made them possible. Patented in England in 1852, the Photographic Engraving marked Talbot's first official attempt at ink photography. The process had the ambition to make images which would maintain the 'natural' appearance of a photograph and, at the same time, have the performance of a print from an engraved or etched metal plate, mainly steel. The objective was to provide permanent ink images and enduring clichés compatible with period printing technologies, able to support the high demand for prints. In spite of close similarities with photography, photomechanical printing involved an all-new range of techniques and materials such as ink, metal plates, and presses. As this paper will discuss, Barclay's hands-on experience was key to guiding Talbot's transition from paper and glass photography to steel. Their exchange of correspondence, plates, and proofs is a precious trace to unpack how Barclay transferred his practical knowledge to Talbot and how his views influenced Talbot's approach to photomechanical experiments. The paper will particularly focus on ground techniques and the conversion of photographic halftones into photomechanical ones, representing the most challenging aspect of Talbot's process. This paper is developed in conjunction with my PhD project, which re-evaluates Talbot's experiments in photomechanical printing as an essential chapter of photographic history. My research argues that a deeper understanding of photomechanical processes will lead to a more inclusive and comprehensive analysis of the photographic image and its circulation as a printed medium. I am particularly interested in investigating the material culture of nineteenth-century experimental practices and the practical and tacit knowledge developed through a consistent engagement and manipulation of materials.

Francesca Strobino is an AHRC CDP PhD candidate at De Montfort University and National Science and Media Museum, investigating WHF Talbot's experiments in photomechanical printing. She studied Cultural Heritages (BA, University of Urbino, ITA) and Art History (MA, University of Florence, ITA), before going to the UK for a Master's degree in Photographic History (Leicester, De Montfort University, UK). Francesca took part in several inventory projects (Scuola Normale Superiore in Pisa, Fotosammlung Ruth und Peter Herzog in Basel, Fondazione di studi storici "Filippo Turati" in Florence, and others), and she held a research fellowship at the University of Florence (2020) and a Curran Fellowship from the RSVP (2021). Since January 2021, she has been co-founder and president of Re-vèrso, a non-profit based in Florence working on the material and cultural history of the photographic medium. Currently, she is working as an editor and cataloguer for the project "Ecosistema digitale per la cultura" in collaboration with Regione Toscana (Italy) focusing on describing of Tuscany photographic collections.

Obscure Marvels: Early photogravures and their photo-historical fate

The refinement of photomechanical techniques, which would ally photography to publishing and solve the problem of image fading, was a chief concern of the French photographic establishment from the 1850s through the 1870s. Photomechanical prints were shown at every exhibition of the Société française de photographie from 1855 to 1876; in 1869, they made up the majority of works exhibited. French photography and science journals followed developments in photomechanical technologies closely. Critics received new essays warmly, and pronounced techniques consummate even as they were evolving.

Given the enthusiasm that greeted these early processes, their prominence in contemporary discussions about photography and its future, and their legacy in a present-day landscape that is effectively void of chemical photographs, one might imagine that photomechanical prints from this formative period would be well represented in histories of nineteenth-century photography. Instead, outside of texts focusing on the development of photographic technologies, they tend to be accorded little comparative importance. They are rarely discussed or illustrated in the field's abundant survey texts, and their material and conceptual complexity, and relevance within the nineteenth-century histories of both photography and fine art, go essentially undescribed.

This paper will explore two major turns in the history of photography, vis-à-vis the photomechanical: the nineteenth-century photo world's turn toward these techniques, and twentieth-century photo history's seeming run from them as a central feature of the medium's past. Focusing on a group of photogravures by the celebrated French photographer Édouard Baldus (1813–1890), this paper will make some propositions about what early photomechanical processes in fact achieved, aesthetically and conceptually, and what they promised to their practitioners and publics. At the same time, it will highlight the startling discrepancy between the importance of Baldus's photogravures to him and his peers and to the historians of photography who followed them. How is it that the same ground-breaking photographic objects have, in their own time and in ours, looked so different to audiences equally concerned with photography and its possibilities?

Kate Addleman-Frankel is the inaugural Gary and Ellen Davis Curator of Photography at the Johnson Museum of Art, Cornell University. Prior to this she held fellowships and curatorial internships with museums including the Rijksmuseum, Amsterdam; Musée d'Orsay, Paris; and the National Gallery of Art, Washington, D.C. Her research on early photography has appeared in the journals *History of Photography, Photographies*, and *Scientia Canadensis*, and in the Rijksmuseum's *Studies in Photography* series. At Cornell, a major focus of her work has been connecting the photography holdings of the Johnson Museum with those of the university's vast library system. She holds an MA in Photographic Preservation and Collections Management from Toronto Metropolitan University and a PhD in Art History from the University of Toronto.

The Intermedial Print: Rotogravure, film, and the reshaping of the female face

We cannot understand photomechanical images in isolation, as the meaning of all images is entangled with all other images. This entanglement is heightened in the case of photomechanical reproductions. The noun Photo/Mechanical/Print suggests some of this rich complexity. In this talk, I place rotogravure images at the heart of key shifts in mass visual culture during the interwar period in an intermedial nexus with Hollywood film. I will examine *Picturegoer* the leading British illustrated film weekly and one of the first British popular magazines to adopt the new reproductive technology of rotogravure, an innovative technique that produced inexpensive color magazines for large audiences. Launched by Odhams Press in 1914, by 1939 *Picturegoer* was the longest-running and most popular film magazine. By then the British movie scene was dominated by Hollywood sound features that starred international celebrities and were projected in opulent picture palaces. *Picturegoer* didn't just track these developments, the magazine was also crucial to the growth of the industry, providing the publicity needed to generate and maintain large audiences. During the twenties and thirties, film became a major factor shaping fashions in clothes, makeup, and hair. Mirroring and enhancing this influence, *Picturegoer* regularly featured articles on fashion and beauty modeled by movie actors. It enabled women readers to assemble a wealth of female knowledge related to the visual elements of film. This expertise was mapped back onto readers' bodies through the making or purchasing of clothes, the application of makeup, and the styling of hair. In this instance, I focus on makeup as women readers began to style themselves using new cosmetic products that mimicked the effects of both film and rotogravures. At the end of the First World War, the use of cosmetics was still frowned on in Britain, but by 1939 90% of women under thirty were using makeup. The cinema and fan magazines were the major influences on this dramatic shift in female appearance. The printing methods that *Picturegoer* developed in its sixteen-acre photogravure plant near London were ideal for replicating the human face at a large scale. Rotogravure allows the face to be shown as literally spotless, without the visible traces of previous reproductive matrixes. A rotogravure portrait consisted of smooth, continuous, delicate tones bringing a new intensity to the mass-reproduced portrait, an aesthetic closely allied to the cinematic close-up. *Picturegoer*'s advertising became noticeably less varied during the 1930s and began to focus almost entirely on beauty products. Detailed, heavily retouched rotogravure images, in conjunction with regular cinema attendance, enabled readers to develop a pleasurable and powerful visual expertise. These intermedial practices allowed women to study, discuss, and reproduce hairstyles, expressions, makeup, fashions, and gestures in new ways. Faces and bodies could change, they were now regarded as malleable. The retouched rotogravure images in the *Picturegoer* were evidence that the body was constructed and served to inspire young women to the dexterous modification of their own appearance in order to produce a photogenic face.

Professor Gerry Beegan is a design historian, curator, and designer whose research focuses on audiences, activism, and reproduction. His most recent project is the exhibition and catalog *Angela Davis, Seize the Time*. The exhibition and catalog have been reviewed in *Ebony*, *LA Weekly*, *Art in America*, and *Women's Art Journal* among others. Professor Beegan's research on the history of print reproduction has appeared in his book *The Mass Image* (Palgrave Macmillan 2008). More recently he has contributed chapters on print media and popular culture to *The Graphic Design Reader*, *The Edinburgh Companion to Women's Print Media in Interwar Britain*, *The Edinburgh History of Women's Print Media,* and the *Ashgate Research Companion to Nineteenth Century British Periodicals*. Gerry Beegan has published essays and reviews on design history and visual culture in venues including the *New York Times*, *Design Issues*, *Journal of Visual Culture*, and the *Journal of Design History*.

Photogravure: Backward into the future

Throughout my working life in practicing dust grain photogravure, a large amount of time has been spent in trying to replace materials that have ceased in manufacture or to find new methods for old techniques, while not losing the essential character of the final photogravure print. From the very beginning, there was the challenge of finding workable graphic arts film materials after the disappearance of Kodak commercial film in the mid 1970's. After passing through the use of many films and iterations of custom formulated developers from raw ingredients, today the current method is the use of digital editing and printing of a film positive with an Epson inkjet printer.

I will present my most recent research, which has been to develop a method for making my own "Gravure Pigment Paper". Until 10 years ago, this material was easily procured from one of two companies that had been manufacturing the material since the latter part of the 19th century. Its production ceased due to declining markets and the evolution of the gravure printing industry. This created a serious void that would need to be resolved if dust grain photogravure were to continue after the surplus stock that current practitioners were able to put by was all used up.
Gravure pigment paper is very similar to the carbon tissue that is used for the production of carbon prints. The only significant difference being the color of the pigment used. Gravure pigment paper, like carbon tissue, is comprised of a gelatin coating on a support (paper or film) with a few additions for plasticity and preservation. I will present my research and the results of making my own gravure pigment paper including pertinent parameters for methods, techniques, and materials used.

Jon Goodman have been actively practicing the Talbot-Klic method of dust-grain Photogravure (Heliogravure au Grain) since 1976. After graduating from Antioch College, his initial research was funded by a fellowship from The Thomas J. Watson Foundation for a postgraduate "Year of independent study and travel abroad". He went to Switzerland searching for somewhere still practicing photogravure and ended up at the Centre Genevoise de Gravure Contemporain in Geneva, where he was able to assemble the basic equipment needed and began research into how to make photogravure plates. Aided by the Visual Studies reprint of the 1895 "A Treatise on Photogravure" by Herbert Denison and a French text for printing students on Heliogravure, he was able to learn the basics of the photogravure process. In 1978 after returning to the U.S., Jon began a series of projects printed in photogravure for Aperture including portfolios of the work of Edward Steichen, Paul Strand and early British Photography. During this time, Jon worked closely with Richard Benson. Since 1984, Jon has operated an independent studio and workshop for photogravure where he has continued to produce photogravure for individual artists, publishers and museums.

Direct Gravure: A creative variant – materials, research, and art

This visual presentation explores my use of direct photogravure and materials and techniques used in the process with contemporary artists. For more than 100 years these processes have shifted and evolved to suit the techniques of the artist and printer. The process of photogravure has not been lost, only the materials used to produce it.

Since 1983 McGraw Colorgraph, Hanfstengle, Autotype and Dragon carbon tissues have ceased to be made. Kodak had long since stopped producing Gravure Positive Film 4135, Commercial Film 4127 and Separation Negative films type 1 and 2, closing the entire branch of the Graphic Arts material line and declaring bankruptcy in 2012. The dedicated photogravure mordant, Roto Iron, manufactured by Fuji Hunt, has also been phased out. Regardless of the materials lost, the process continues through substitutions and advanced technologies.

At Two Palms the principal focus has been on the practice of direct gravure, where the artist directly draws/paints onto clear film that is substituted for the photographic positive conventionally used in the photogravure process. Direct gravure can offer the artist a starting point that is tonal. The plate consists only of aquatint and can be further manipulated using traditional etching techniques by the artist to arrive at a finished print. Computer manipulated images can be output onto film either by tri-laser film recorders or ink-jet printers. These films bond seamlessly with the photogravure process. The combination of a 19th century photomechanical reproduction process with 21st century technology can be fascinating when merged within the work of contemporary artists.

The continued input of innovative printers and artists, the teaching of techniques to the next generation, and the addition of new materials, keeps the process of gravure an important and relevant process in the creation of works of art.

Craig Zammiello is a master printer and artist with over 40 years of experience in all areas of printmaking. He is the author of a studio manual on photogravure and co-author, with Elizabeth Hodermarsky, of the book Conversations from the Print Studio published by Yale University Press. For 25 years at Universal Limited Art Editions, Craig collaborated with numerous artists, notably Jasper Johns, Robert Rauschenberg, James Rosenquist, Chuck Close and Kiki Smith. Presently, he works as a master printer at Two Palms with such artists as Matthew Barney, Mel Bochner, Peter Doig, Chris Ofili, and Elizabeth Peyton among others. He received his M.F.A. from SUNY Stony Brook in 1995. He has taught numerous workshops and classes at New York University, Yale University, Royal Academy of Antwerp and Frans Masereel Center, Belgium. Currently he is an adjunct professor and graduate mentor at Columbia University in NYC.

A Close Consideration of Five Works by Six artists Wherein the Choice to Emphasize the Prosaic Aspects of Mechanical Processes Produces Poetic Artwork

The nature of the focus and the works considered in this presentation are:

- How a non-standard use of registration disrupts the order of problematic power structures in VOC, offset lithography, 2022, by Clifton Meador.
- How magnifying the halftone parallels a microscopic examination of the expanding world of viruses in times of isolation and contraction in Delirium, archival pigmented inkjet, 2020, by Philip Zimmermann.
- The use of posterization and pressure-printing to create subtly nuanced portraits in The Book of Hours, digital, letterpress, and risograph printing, 2021, by Julie Chen and Keri Miki-Lani Schroeder.
- How the use of a historical process transforms contemporary photographic documentation into an image artifact of possession in Gaze, photogravure and letterpress, 2004, by David Morrish.
- The way visibly distinct layers of printing echo the emotional/intellectual integration of visual observations in Sensible, photogravure, lithography, letterpress, drypoint, (a work in progress) by Marlene MacCallum.

Prose writing is often about the smooth conveyance of information; a reading experience that prioritizes the delivery of content. Poetry, in contrast, evokes sensibility by emphasizing the structural elements of language. The sounds of words, syntax and semantics, pattern, and rhythm, create a distillation of concept. I am intrigued by the way this emphasis of the formal elements offers a heightened emotive response, and, how this approach can be applied to the creation of visual artworks. While historical and contemporary photomechanical processes can be an effective means to the seamless reproduction of imagery, this presentation explores the paradox of formal structure as the means to emotive response. I will present five artworks where the clearly visible mechanics of creating images and text serves as a key factor in generating a poetic reading/viewing experience. In each case, the artist has carefully chosen the means of producing the printed imagery as a critical structural support for the content of the work. Equally crucial, the viewer is tangibly aware that the making and printing of the work transforms source content and creates a poetic interpretation. This presentation is informed by, and presented from, my experience as a visual artist working primarily with photomechanical print processes.

All five artworks considered in this discussion use the book form and are interactive; they unfold and reveal themselves layer by layer. Inherent to photomechanical processes is the layering of steps. Every step is an opportunity to edit and a moment of creative consideration. Many of the methods employed in making these works may at first seem unlikely fit to the assumed function of a process. Like contemporary poetry, artists using photomechanical processes are not always obedient to conventional practices, but rather, often take inventive and subversive approaches. This is the starting point from which to delve into the intention and purpose of each piece and to explore how the photomechanical process can be a poetic craft.

Marlene MacCallum lives in Prince Edward County, Ontario, Canada. Marlene is an Honorary Research Professor of the Visual Arts Program, Memorial University where she taught printmaking, photography and book arts. She retired from teaching in 2016 and relocated from Corner Brook, NL to PEC. Her practice has also moved, from singular photogravure prints to their integration into book works to the inclusion of writing and interactive digital formats. Consistent is the attention to the poetic potential of the ordinary matters of daily life. Marlene has exhibited prints and book works in 131 exhibitions in 18 countries. Her works are held in 48 public collections. Marlene was elected to the Royal Canadian Academy of Arts in 2006. She and David Morrish co-

authored *Copper Plate Photogravure: Demystifying the Process*, 2003. Her research projects on Artists' Publishing and The Visual Book were funded by the Social Sciences and Humanities Research Council of Canada.

History, Methods, and Contemporary Examples of Photomechanical Screenprinting

The presentation will give a brief overview of the history of Screenprinting, a tutorial of the process, and examples of printmaking studios and artists that use the photomechanical Screenprint process in interesting ways. The presentation will rely heavily on a slideshow, using historical images of Screenprinting, illustrating the technique of developing and printing a screen, and examples of artists and Printshops creating prints.

History of the screenprint process: The first section will briefly touch on the origins of Screenprinting in Asia, and the later adoption of the technique in Europe. The photomechanical Screenprinting process that is used today was initially developed for commercial printing in the 1910's, and artists began using it in the 1930's. Finally, the wide adoption and larger notoriety of the process in the art world is credited to the Pop artists of the 1950's and 60's.

Methods of exposing and printing a screen: I will share a detailed look at preparing and printing a screen. The process begins with preparing the photo-emulsion and using it to coat the screen. After the emulsion is dry, the screen is exposed to light, using a positive film to create an image. I will describe the process of converting a grayscale image into a halftone using the computer, and printing a film with a digital printer. After the screen is exposed and developed, there will be a visual account of printing ink through the screen onto paper.

Contemporary examples: Although the history of Screenprinting will be touched on, I would like to spend time sharing some contemporary examples of artists and printmaking studios that use the process today. Due to the quick and flexible nature of the process, many artists are still finding ways to incorporate it in their studio practice. There are also countless Printshops in the world still using the process, pushing into fresh creative and new technical directions.

Erik Hougen was born in Bismarck, ND in 1982, and currently works in New York City. He received a BFA from Minnesota State University Moorhead and a MFA from Pratt Institute. He participated in the Artist in the Marketplace (AIM) program at the Bronx Museum, and was a SIP Fellow at the Robert Blackburn Printmaking Workshop. Hougen's work has been exhibited at the Bronx Museum, Montclair Museum, the International Print Center of New York, Planthouse, Foxy Production, and Kunsthalle Galapagos in Brooklyn. Hougen was a finalist in the Outwin Boochever Portrait Competition, at the National Portrait Gallery in Washington, D.C. in 2013. Erik Hougen has printed for Kathy Caraccio, Pace Prints, and was a studio assistant for Takashi Murakami. He was the Artistic Director and Master Printer at Lower East Side Printshop for over a decade. Currently, he is the Master Printer and Silkscreen Studio Director at Two Palms.

Picturing the Book in Three Dimensions: William Griggs' embossed photo-chromolithographic illustrations of bookbindings

This paper investigates the work of British chromolithographer William Griggs (1832-1911), focusing on his photolithographic book illustrations that were printed not only in color, but with three-dimensional embossed line and texture. After working for the India Office, where photolithography and photozincography were employed to reproduce artifacts held in the India Museum, Griggs developed his own technique of "photo-chromo-lithography," which he presented with practical demonstrations to the London Photographic Society in 1868 and disseminated in pamphlet form. This technique used a photolithographic image to establish a "key" with which to separate color and varnish layers, reducing the labor, time, and cost required to produce chromolithographic prints, and establishing Griggs as an important figure in the early history of photomechanical and color printing. Griggs was a prolific printer, but this talk focuses specifically on his photomechanical reproductions related to book and literary history. In addition to producing early facsimiles of Shakespeare's first folios and illuminated manuscripts, Griggs printed several catalogs that illustrate bookbindings. While most of these catalogs focus on historical examples held in the Royal Library and the British Museum, others are devoted to contemporary work produced by groups like the Guild of Women-Binders. Reproduced via Griggs' technique of photo-chromo-lithography, the images of bookbindings in these catalogs are not only printed in vivid color, but are also embossed and textured to reproduce the tooled lines and grain of leather. Literally printed in three-dimensions, these limited-edition luxury catalogs raise questions both technical and contextual. In addition to establishing the body of work generated by Griggs, historical research and technical imaging will shed light on Griggs' processes and materials. Further, the paper will seek to understand how contemporary audiences would have responded to Griggs' three-dimensional renderings of bookbindings. Griggs' publications confirm that historic bookbindings were increasingly studied and noticed by a general public interested in the history and design of the book, with a new interest in owning and interacting with books as objects, not just as texts. This paper will explore the role of chromolithography in fueling a Victorian interest in the study of the book, the contemporary response to and understanding of facsimiles, and the different ways in which books functioned and meant to readers and collectors.

Lydia Aikenhead is an Assistant Book Conservator at the Thomas J. Watson Library at the Metropolitan Museum of Art. She graduated in 2019 from the Conservation Center of the Institute of Fine Arts, New York University, earning a M.S. in Conservation of Historic and Artistic Works and an M.A. in the History of Art and Archaeology. Prior to joining the Watson Library, she held postgraduate fellowships at The Morgan Library & Museum and the Conservation Center for Art & Historic Artifacts in Philadelphia.

Archive of Light: Psychedelia's dancing lithographs

Amidst the stroboscopic hues of San Francisco's emerging music scene in the 1960s, psychedelic poster artists sought to animate the printed surface with an experimental approach to photo-offset lithography. Technicians exposed enlarged film frames to photosensitive plates to create printing matrices that could be sequenced together to create a short episode within the print. However, unlike a ribbon of film, which links each frame together in a linear fashion, psychedelic artists requested each metal plate be printed atop one another. Solely creating separation between the layers with color, the stacked registration compressed the film's scene into a single moment, creating a visual cacophony of storytelling. These kinetic posters appear as double (or triple) exposure photography when viewed in a plain setting, with a central subject existing in multiple positions. Dizzying at first glance, the composition is only clarified by the dancehall's psychedelic light show. Each layer dissolves one by one as light of the same hue washes out the ink on the page. Red ink vanishes in red light, only to reappear as blue light strikes the poster's surface seconds later. In effect, the dancehall becomes the organizing mechanism, but only for a moment or two. Despite their small printing budgets, psychedelic artists were able to participate in the burgeoning media art landscape by looking backwards to the nineteenth century. Through iterative experimentation, poster artists adapted photo-offset lithography to make use of their existing dancehall surroundings–no outlets or bulky video projection equipment required. Instead of plugging in a projector, artists could simply hang their lithograph on the wall, wait for the show to begin, and watch the lights shift their composition throughout the night. Consequently, this strategy highlights the inherent reflexivity of psychedelic ephemera and its surrounding built environment. Acting as an archive of the process itself, with each layer in view rather than a tidy composition, the moving poster puts all of the lithograph's plates on full display. Using technical art history and process-based analysis, my paper highlights how studio experimentation provided photo-offset lithography with a new identity in the 1960s and opened up its potential as a time-based medium. My research expands upon conservator Victoria Binder's work on San Francisco's psychedelic posters, bringing aspects of temporality and the human sensorium into conversation with the posters' technical components. My work seeks to situate the kinetic poster within the broader context of its intended surroundings to consider its affective power, answering the "why" alongside the "how."

Moreover, collapsing segments of time into a single print draws attention to how print reflects the ideals of its makers; in other words, distorting time within psychedelic print, just as tenets of psychedelia suggest. Drawing upon an expansive base of private and public archives, my paper highlights the technical prowess of the poster artists who manipulated this simple photomechanical process to uncover an entirely new genre of print, one that is deeply connected to the overall aims of psychedelic aesthetics.

Aleisha Barton is a doctoral candidate in the art history department at the University of Minnesota. Her work primarily considers twentieth-century print in the United States alongside discussions of technical art history, color theory, and process. Barton's dissertation, "'Your Eyes Are Limited': Psychedelic Aesthetics in the Post-War Age, 1966-1970" examines psychedelic posters, broadsides, and zines to understand their role in creating community networks through print experimentation in San Francisco's Haight-Ashbury neighborhood. Her expansive training includes a personal printmaking practice which informs her scholarship, alongside an intensive fellowship at the Straus Center for Conservation and Technical Studies. Her work has been supported by various institutions, including the Andrew W. Mellon Foundation, Harvard University, the University of Minnesota, the Henry Luce Foundation and the American Council of Learned Societies. Barton's professional affiliations include the Association of Historians of American Art, the Association of Print Scholars, and the College Art Association.

New Methods and Materials for Photomechanical Printing in the 21st Century

Researchers and printmakers of the 21st century can access and explore photomechanical print archives and reflect on the countless iterations and the rich technological and material developments from the 19th century. Over the century, more efficient solutions were developed; thus, many of these extraordinary and complicated processes fell into disuse. However, for many print issues in our times, the answers have derived from the past. With the advent of digital technologies, many of the problems experienced in inkjet printing, halftoning, colour fading, the fidelity of colour, and image resolution, were explored and resolved in the 19th century by photographers who were experimenting with pigments, plates and printing presses.
When Walter Benjamin (1892-1940) stated in 1936 that an original image could not exist without the knowledge of a reproduction, he could not have imagined the impact of the 21st-century image on the audience of the future. His worldview was framed by the technology of his time. Reinvention and innovation were borne out of a drive for commercial expediency with the need to create multiple reproductions and facsimiles. With the impact of digital printing technologies, the printed photographic image is now so highly ubiquitous, placing it on every street corner and any printed item.

Imaging and photographic history have shown synchronous advancement through chemical, technical and industrial innovation. Images are now printed using inks that are highly coloured, extending the traditional gamut far beyond normal colours - by adding extra dimensions including fluorescent, metallics and special effects. This paper and presentation will fast forward from the 19th century into the 21st century by exploring new chemical, technical and industrial innovations. In particular, I will discuss a range of inks that present new ways of printing. RGB printing is a new method that transforms everything we know about CMYK subtractive printing. Printing onto black paper combines additive print methods and Spectraval™ pearlescent pigments that can radically change the appearance of a printed image. However, as these pigments inhabit a radically reduced colour gamut, the outcome of the printed image is challenging to predict. These pigments cause light to hit the surface of the mico plates to diffract and interfere, thus sending light in all directions, dramatically changing depending on the viewing angle.

Using and applying digital printing technologies, I will discuss novel methods for photomechanical printing to predict the final image more precisely. The paper will demonstrate a step-by-step generation of colour charts, colour separation, halftoning and printing the RGB pigments, measuring the colour charts, how they can be used to soft-preview the final printed colour, and how to determine specific colours based on the colour gamut. So-called red, green and blue pigments are mixed with mica. They can be used to create alternative images that mimic the appearance of different materials and colours, such as beetles, butterflies, and artificial colours. Although currently used for decorative effects for printing on packaging, these may be a challenge to traditional subtractive printing methods.

Dr. Carinna Parraman is Professor of Design, Colour and Print and Director of the Centre for Print Research, at the University of the West of England, Bristol. As Director of CFPR, she leads a cross-disciplinary research team comprising expertise including scientists and technologists, designers and artists. The CFPR group are exploring the future of printing and fabrication, new ways of thinking and working alongside traditional methods of making. Her work spans art and science, including colour mixing, colour printing, texture appearance and photomechanical printing processes. She collaborates with different sectors, including industry, heritage and fine art print. Her print practice explores colour mixing of patterns, elements and halftones that dazzle and vibrate. She is experimenting with using RGB pigments on black paper to create new colour appearances. She is also a collector of paint colour charts and real-world colours.