

Introduction

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Imagine the twentieth century without photography and film. Absent in its history would be images that defined historical moments and generations: the Battle of the Somme, the death camps of Auschwitz, the assassination of John F. Kennedy, the Apollo lunar landing. There would be no photos of migrant farm workers during the Great Depression, no family album of suitably posed great aunts. It would be a history constituted from, dare we say it, *just* artist renderings and the written and spoken word. To inhabitants of the twenty-first century, deeply immersed in visual culture, such a history feels insubstantial, imprecise, and perhaps even unscientific. And yet photographic technology was not always a necessary condition for the accurate documentation of history. History's "protocols of evidence and argument" long consisted of writing rather than picturing.¹ But the introduction first of photography and subsequently of film in documenting the present created new types of records that altered notions of historical, legal, and scientific evidence; changed interactions among scientists and their subjects; and challenged the very construction and meaning of the archive.

The documentary impulse that emerged in the late nineteenth century combined the power of science and industry with a particularly utopian (and often imperialistic) belief in the capacity of photography and film to visually capture the world, order it, and render it useful for future generations. The "unifying sense of purpose," evident in early manifestos like *The Camera as Historian*, which encouraged the scientific use of photography and film in documenting projects of truly enormous scope, is perhaps now less visible, buried amid the staggering quantity of photographs and films that such projects generated.² In fact, the vestiges of the documentary impulse are still found everywhere: in storage freezers of scientific laboratories and natural

history museums, in the attics and basements of private homes, in the archives of libraries and universities, and on websites, ranging from Archive.org to Youtube.com.

In the virtual world of images summoned by every scholarly query, we tend to forget the material dimensions of the visual. But the sheer mass of photograph and film documents that take up space in archives and consume vast resources in their virtual state on the web is a reminder that the materiality of photographs and films extends far beyond the chemistry, size, and format of a particular document. At 100 million images and counting, Corbis, for example, one of the largest sites for one-stop shopping for digital still and moving images, is dependent upon a gigantic physical infrastructure of fiber optic cables, routers, hubs, and servers that greatly expand the material footprint of the archival image. It is merely the tip of an iceberg, amassed over a century of collecting via photography and film. Whether we measure in quantities of acid-free solander boxes and meters of rolling stack shelving or by the electricity powering countless servers delivering the public interface of museums and galleries, online databases and image banks, it is clear that acquisition and storage far outstrip chemistry, size, and format as material aspects of the documentary impulse.³ Stopping at acquisition and storage would also only give an incomplete picture of the effect of this impulse. Each step of documentation—from the initial recording of images, to their acquisition and storage, to their circulation—has physically transformed natural and built environments, altered the lives of human subjects, reconstituted disciplines of knowledge, and changed economic and social relationships.

This book is about the material and social life of photographs and films made in the scientific quest to document the world. We find their material and social traces in the impulse that drove their creation; the historical and disciplinary dynamics that surrounded their production; the collecting practices of librarians, archivists, and corporations; and the archives they inhabit. Together, the essays in this volume call into question the canonical qualities of the authored, the singular, and the valuable image, and transgress the divides separating the still photograph and the moving image, as well as the analogue and the digital. They also overturn the traditional role of photographs and films in historical studies as passive illustrations in contrast to active textual scholarship.

In the last decade, photographic and film scholars like Gillian Rose, Joan Schwartz, Paula Amad, Elizabeth Edwards, and others have taken seriously the notion that questions of materiality and agency lie at the heart of photographic documentation.⁴ Shifting the focus away, as Rose writes, from “scientific description [or] artistic sensibilities” and toward the work that photo-

graphs and films as documents do in the world requires a close look at the urge to document the world in still and moving images. Influenced by structuralist philosophy, in particular Michel Foucault, scholars like John Tagg and Allan Sekula, to name perhaps the best known, delved into the social and political structures of photographic archives as early as the late 1970s, opening up a field of research in which the evidential and recording power of photographs was largely socially constructed and politically motivated.⁵ In this volume, we see the documentary impulse as part of a set of practices with epistemic intent, deeply influenced by the ideals and practices of late nineteenth-century scientific communities. The sheer excess of documentary material, coupled with the diversity of scientific disciplines that have produced and utilized it, far outstrips the ability of any single methodology or discipline to comprehend an impulse that has at times been gargantuan in its ambitions. Because photographs and films as objects move so readily across different cultural spheres—for example, from the family, to the courtroom, to the tabloid press, as Jennifer Tucker reveals in her analysis of the Tichborne claimant affair (chapter 2)—shifting their meanings accordingly, a mixture of methods and crossing of boundaries across the fields of photographic and film history, visual anthropology, and science and technology studies is in order. In attending to the mobility, materiality, and mutability of photographs, for instance, Elizabeth Edwards is able to interrogate a photograph of Pasi, a Torres Strait inhabitant, taken by anthropologist A. C. Haddon, as both an anthropological object indicative of a sea change in anthropological methodology and a family portrait (chapter 5). “Meaning” and “fact” lie not simply inside the photographic material but in a set of relationships formed between the maker, the user, the object, and the archive.

Drawing upon scholars from across the fields of art history, visual anthropology, and science and technology studies, *Documenting the World* interrogates questions of materiality and agency in the work that photographs and films do as evidentiary documents, narrative objects, and the stuff of archives. Despite the authors’ different disciplinary backgrounds, the essays share a commitment to make tangible the different material manifestations of photographs and films: in the making of the document as evidence (Tucker, Edwards, Geimer, Vertesi); in the narratives accompanying the circulation and recirculation of still and moving images (Edwards, Mitman, Ginsburg); and in the life of photographs and films within the archive (Klamm, Wilder, Blaschke).

These themes—documents and evidence, circulation and recirculation, and archival lives—offer a general structure to the volume. We open with acts of becoming, as photographs and films acquire evidentiary force in the world. The essays span more than a century, from the place of photographs and films

as evidence in the Victorian courtroom and anthropology to the making of scientific documents out of manipulated digital images beamed back from the Mars Rover. Documentary images matter in the way that people imagine the past, make sense of the present, and envision the future. In his essay “The Colors of Evidence” (chapter 3), for example, Peter Geimer asks the provocative question, “How could it be that throughout the nineteenth century photographs were treated as documents, visual evidence, and traces of the real even though such a fundamental dimension of reality—color—was missing?” Photography and film have mattered literally, as Geimer shows, in imaginings of the past as a monochromatic world of black and white.

But what happens when the material and social relations of the documentary object are reconstituted, resulting in quite different stories and political ends from those initially intended in their making? In Gregg Mitman’s investigative journey into the many lives of a 1926 Harvard expedition film shot in Liberia (chapter 6) and Faye Ginsburg’s exploration of the repurposing of Nazi medical films by disability activists (chapter 7), we find the kind of productive work that can happen when documentary images take on second lives. The debris left by colonial and totalitarian regimes in their impulse to collect, classify, and control the world are being taken up by individuals whose ancestors were the objects of an imperial gaze.⁶ In these liberating acts, photographs and films are literally reborn through new social relations.

If photographs and films can be so easily repurposed, so too is the visual archive subject to being cast adrift from its moorings in particular institutional practices. With deep ties to the visual regimes of nineteenth-century bureaucratic management and colonial rule, and increasingly influenced by twenty-first-century commerce, the visual record is anything but neutral. Even in repurposing, the photograph, film, or archive carries with it traces of its origins and of its original institutional place. Stefanie Klamm details the complicated path taken by photographs to get into archaeological and art historical institutions (chapter 8), which then immediately begin to efface disciplinary presumptions and individual social biographies in order to envision the timelessness of the archive over highly individual times and places of production.

Why should these particular media be accorded the kind of attention we have outlined?

Over the last two decades it has become increasingly apparent that photographic technology, with its scientific overtones, has often been invoked to legitimize visual methods for investigating the world, as well as for recording and archiving it.⁷ At the same time a “pictorial turn” has informed scholarship in science studies.⁸ As historians, anthropologists, and sociologists of science became more attentive to the relationships between “making and knowing,” sci-

entific images—whether illustrations, graphs, photographs, or films—became a site for investigating the practices at work through which knowledge claims became stabilized and an entry into realist-constructivist debates that animated much scholarship in science studies during the 1980s.⁹ In recent years, the scientific image has also offered a portal into the changing culture of science—a means for discerning shifting epistemic virtues, norms, and codes of behavior embodied in the scientific persona, as well as the permeability of boundaries between the cultures of science and other sites of cultural production, from craft guilds in the early modern period to the Hollywood studio system of the twentieth century.¹⁰ Since Lisa Cartwright’s groundbreaking work two decades ago on the cinema as a social apparatus through which Western science and medicine have analyzed, configured, and regulated the human body, scholars in film studies and visual culture have likewise been drawn to scientific images in discerning the cultures and experiences of looking across different forms of knowledge and spectatorship.¹¹

Until recently, image content has been at the core of much scholarship on the visual culture of science. But new approaches, driven by an attentiveness to the medium itself and to the ecologies—material, social, and perceptual—through which new objects come into being are taking hold across the fields of art history, visual anthropology, and science studies.¹² It is an approach motivated by what Jennifer Tucker has described as “the need for greater critical awareness of visual images as physical, material artifacts mediated by past and present forces.”¹³ Deeply attentive to the material culture of making, collecting, and storing photographs and films, the authors in this volume believe the medium matters, literally, in both its analog and digital forms. *Medium* refers, after all, to a “thing which acts as an intermediary.” According to the *Oxford English Dictionary*, it also refers to an “intervening substance through which a force acts.” As objects, photographs and films are constituted through a set of relations that give them agency in the world.¹⁴ They, along with the archives that contain them, are, as Faye Ginsburg notes in this volume (chapter 7), “grounded in powerful cultural narratives and counternarratives that have histories and consequences.”¹⁵ Organizing structures that house photographs and films also work on the researcher in various ways.¹⁶ Corbis’ image bank, for example, and its structure of a search engine based on market-driven demands, invisibly channels researchers in the direction of certain types of images over others, as Estelle Blaschke’s essay (chapter 10) reveals. To imbue photographic and film documents with agency is to look upon them through the dynamic social interaction between people and things.¹⁷

Physically, photography and film create different taking, viewing, storage, and circulation experiences. We pass a still photograph from hand to hand

or post it to a colleague, family member, or friend. The tactile nature of photographic exchange, as well as a photograph's ability to become lost in text archives, are avenues closed to film. But time-lapse techniques not available to photography can focus an observer's attention on processes of long duration. The size, shape, and chemistry of film reels and photograph albums necessitate different cataloguing, archives, and research rooms. In turn, these research rooms demand our attention as scholars for how they shape research practice and the historical narratives emerging from it.¹⁸ Both in and out of the archive, photographs and films are also constantly acquiring new meanings, becoming part of a social fabric as we use them to relate to each other, to the past, and to the future.¹⁹

In recent years, historians of science have drawn attention to the life of scientific objects. Such objects may, like photographable spirits, have faded away in existence. Or they may, like MRI pictures of mirror neurons, be in a state of becoming. Of critical importance is that such objects have action on the world. We do not intend here a sort of simple animism, but to recognize that photographic material and the archives that they make up are "heavy with consequences for everyday experience."²⁰ We interact with photographs in complicated ways, and the impulses that led to their creation imbue them and their archives with a particular sense of purpose. In these essays, photographs compose human biographies, stake out disciplinary boundaries, and endow planets with physical properties. Not all material objects are imbued with epistemic attributes, of course. But the distinctive materiality of the photographic medium, lending itself at times to a magical illusion of objectivity rendered by the receptive properties of a chemically treated surface, has often given photographs and films important epistemic status across a range of scientific fields. Even while each individual film and photograph can be an epistemic object, the objects they in turn construct can become epistemic things. Sometimes their existence as objects appears ephemeral, like Percival Lowell's photographs of canals on Mars, only to be reborn in a different time and place as decorrelation stretches proving different colored soil on the Mars Rover mission.²¹ Photographic biographies of people, things, disciplines, species, events, and countries change over time not only with the changing nature of the audiences, but also with the changing understanding, heightened awareness, and shifting technologies that comprise photography and film documents. What makes their biographies most compelling is the polysemy of their accumulated histories, created for one purpose, archived for another, and reinterpreted for yet another.²² And what sets the lives of these objects in motion is an initial impulse to document the world.

The Rise of an Impulse

When Alexander Graham Bell took over the presidency of the National Geographic Society in 1898, he envisioned a new life for the society's failing magazine, announcing that it would cover "the world and all that is in it." The magazine was the first popular scientific periodical in the United States to make extensive use of photographs. It was a decision rooted in the experiences of the magazine's editor, Gilbert Grosvenor, whose father, Edwin Grosvenor, an Amherst College history professor and friend of Bell, had published in 1895 a scholarly history of Istanbul richly documented with photoengravings.²³ By the late nineteenth century, the ontological faith in photography (soon followed by a similar belief in the authenticity of film) became a compelling reason for its incorporation into the methods and exposition of emerging human sciences (history, anthropology, archaeology, geography, art history) seeking scientific authority and legitimacy. As Costanza Caraffa notes, documentary photography's appeal in the historical disciplines rested in a belief that at long last one would be "able to reconstruct the past as it really was (Ranke's *wie es eigentlich gewesen war*)" through the camera's ability to record "hard ('authenticated') facts."²⁴ And the archive became, by the late nineteenth century, the widely agreed repository where such documents in the scientific pursuit of history would be stored.²⁵

Photography and film enabled Bell's grandiose ambitions to capture "the world and all that is in it." But those ambitions were also rooted in a particular Judeo-Christian perspective that Donna Haraway has described as a God's eye view.²⁶ Indeed, Bell's popular slogan was but a variation of Psalm 24, "the Earth is the Lord's and the fullness thereof." Collecting, classifying, and ordering the world were part and parcel of imperial ambitions. The documentary impulse and the remains of it found among the countless photographs and films located in colonial archives suggest how rooted "the dream of a totalizing taxonomy" and an accompanying totalizing vision of the world were in the practices of empire.²⁷ We recognize the Eurocentric focus of documentary practices and image-making discussed in this volume. It is a limitation shaped by the questions asked in this volume that revolve around the material and social lives of photography and film in science and in the archive. It is also an invitation to consider how documentary practices have been understood outside the particularly Western ways of seeing and knowing the world explored in this collection of essays.

While photography and film helped realize the utopian and imperial ambitions of Western nations and institutions to visually seize and contain the

world, the perspectives and projects that followed were unified neither in their goals nor in their ideologies. Yet the impulse is undeniable.²⁸ How else can we explain the immense quantities of film footage and photographs dating to the late nineteenth and early twentieth centuries that fill the spaces of national, museum, university, industrial, and private archives throughout Europe and North America, and whose holdings are now the source of contention by peoples who never wished for themselves, or their stories and rituals, to be contained?²⁹ We discover these impulses everywhere. They find expression in the ambitious plans of Ernest Mouchez, director of the Paris Observatory, who organized an international conference in 1887 to engage the participation of eighteen observatories from twelve countries to create a photographic map, a grand *carte du ciel* or astrographic catalogue, of stars to the fifteenth magnitude. The project came to an official end in 1970, but not before over 22,000 photographic plates of the skies had been taken.³⁰

Closer to the earth, across English counties, cities, and towns, over a thousand photographers, from local camera club participants to members of natural history, archaeological, and antiquarian societies, took part in Britain's photographic survey movement between 1885 and 1918. The result, as Elizabeth Edwards writes, "was a historical topography manifested through antiquities, built environments, folk customs, current events of historical interest, and, in the more ambitious, geology and natural history" and an archive of over 55,000 images.³¹ This photographic impulse extended far into the British Empire's reach. The Archaeological Survey of India, established in 1861 by the British Raj to survey and document the historical sites of India, gathered up over 30,000 images now contained in the British Library. Their production depended on the labor of British officers and Indian photographers; the latter, unlike their British counterparts, never received credit on the photographs or official publications. The presence and absence of such traces are telling reminders of the colonial power relationships inscribed in the visual record.³²

But the nature and extent of these impulses were not confined to national and colonial patrimonies on display. They could also be put in the service of those without power, whose lives were often hidden. In the 1930s, the Farm Security Administration made visible the plight of the downtrodden and displaced—from sharecroppers, to migrant workers, to the urban poor—to the American public. Amidst "the piles of this, stacks of that, yards of this, miles of that, boxes, bales, and timber" gathered by FSA photographers, Edward Steichen found the "most remarkable human documents ever rendered in pictures."³³

Single iconic images, such as Dorothea Lange's "Migrant Mother," that so

captured Steichen and became etched into historical memory, have been the subject of countless works in photographic and art history. Less attention has been paid to the copiousness of material gathered by the FSA staff under the lead of economist Roy Stryker. The 77,000 black-and-white photographs and 1,600 kodachromes taken by staff photographers in the field between 1935 and 1942, which Steichen in 1938 referred to as “the tweedle dum and tweedle dee,” suggests that something propelled FSA photographers beyond a logic of singularity. The sheer number of photographic records taken is a clue to the documentary practice that turned FSA photographer Dorothea Lange into a “discoverer, a real social observer.”³⁴ When we consider the weight of documentary evidence gathered up by FSA photographers, the place of photography in a long tradition of the social science survey dating back to Lewis Hine’s early twentieth-century photographs of workplace conditions in the industrial mills of Pittsburgh comes into view. And it shifts our attention to the hybrid properties of photography and film as media of art, of science, and of their interrelationship.

Sciences of the Everyday

Within the predilection and fascination to document the world lie a passion and nostalgia for the everyday that gathered particular momentum at the turn of the twentieth century. The advent of cinema and its early fascination with capturing the actuality of ordinary events solidified what Mary Ann Doane describes as the “drive to fix and make repeatable the ephemeral.”³⁵ Before film became entrenched in narrative form, the “collection and storage of information about daily life,” as Paula Amad writes, was a part of the “early application of film’s positivist and utilitarian tendencies.”³⁶ Such uses are evident, like their photographic counterparts, across countries and institutions. In 1920, the *Journal de Cine-Club* commented on a remarkable “cinema museum” in Boulogne-sur-Seine that housed kilometers of film documenting intimate and seemingly mundane elements of social life throughout the world: migrants looking into the camera, huddled together, on a transatlantic voyage; passersby on a New York City street. From 1908 to 1931, the wealthy French banker Albert Kahn built an Archives de la Planète, sending travelers throughout the world who helped to amass an almost unfathomable visual inventory of life that comprised 72,000 color autochromes, 4,000 stereographic images, and 183,000 meters of largely unedited film.³⁷ Not to be outdone, the American industrialist Henry Ford sponsored one of the largest film production units in the world. The motion picture department of the Ford Motor Company shot

and collected over 1.5 million feet of film from 1914 to the 1940s, documenting scenes of social life, industrial processes and products, and urban and rural landscapes across the United States and throughout the globe.³⁸

Industrialists like Kahn and Ford were hardly alone in their enthusiasm for the promise of photography and film in amassing a record of “the world and all that is in it.” Already a part of the 1898 Cambridge Torres Strait Expedition, still and moving pictures had become thoroughly ingrained into the practices of expeditionary science by the 1920s. Indeed, almost every expedition undertaken on behalf of the American Museum of Natural History after the First World War, from William Douglas Burden’s 1926 expedition to the Dutch East Indies in search of the Komodo dragon to Roy Chapman Andrews’ hunt for fossil dinosaurs in the Gobi, included a film and photographic record of landscapes, wildlife, and the customs and daily life of people encountered along the way. Sometimes the aspirations of industrialists and scientists combined. Citroën sponsored three expeditions across the Sahara, central Africa, and Asia in motorcars, accompanied by geographers, archaeologists, and cameramen documenting on film the physical and economic geography, ancient monuments, and ethnic groups in remote regions of the world. The films were advertisements for and testimony to the combined power of science and industry, remarked president of the Royal Geographic Society Major-General Sir Percy Cox, in “bringing various remote and uncivilized portions of the world within the purview and reach of civilization, not only in the interests of Citroën, but in the interests of science generally.”³⁹ Citroën’s expeditions, like the Harvard African Expedition undertaken on behalf of Firestone, the subject of Mitman’s essay (chapter 6), are indicative of the extent to which film became an instrumental part of expanding the global economic reach of science and industry in the wake of the First World War.

In his efforts to establish a new genre of film “documentary” dedicated to the “creative treatment of actuality,” the British filmmaker John Grierson condescendingly referred to this accumulating body of travelogues, newsreels, industrial and scientific film as “plain descriptions of natural material.”⁴⁰ But Grierson’s beginnings as a filmmaker in Britain’s Empire Marketing Board were beholden to the “laborious accumulation of facts” in the service of promoting scientific research and economic development in the British colonies.⁴¹ The history of nonfiction film did not move along a predetermined course from the raw, unedited slices of everyday life in early actuality films to the artistic form of narrative documentary. The camera’s devotion to what Paula Amad describes as the “servile accumulation of facts” in early actuality film was itself part of film and photography’s scientific force and attraction. But the very presence of the camera had a material affect on the relationship between

the scientist and his or her subject that at times needed to be disciplined. Elizabeth Edwards notes how A. C. Haddon expressed frustration with photographs from the Torres Strait Expedition ruined because the subject was “looking at the photographer, not at his work” in the “common actions of daily life.”

This obsessive impulse to capture the seemingly mundane, ephemeral moments of life in all its “multiplicity, diversity, and contingency” can, in part, be seen as a reaction to the dizzying speed with which time came to be registered as a function of modernity.⁴² Industrial technologies and processes that revolutionized travel, communication, mass production, and energy also made possible technologies of representation capable of recording the excess of things and accelerated temporality that at times seemed too difficult for the human mind and body to absorb and comprehend. In the relentless pulse and pace of industrial mechanization, life could be too easily lost. And it was life, in all its spontaneity and contingency, that both became a subject of early cinema and shaped cinematic practices. Indeed, as Hannah Landecker has argued, early cinema emerged out of a “dense set of interconnected works dealing with life, time, and film.”⁴³ Science and cinema converged in the early twentieth century around the problem of seeing life and representing time. Across numerous scientific disciplines, the potentiality of cinema lay in its power to examine and exhibit the unseen hidden dimensions of life and movement: to see life through time.

“Contingency,” Doane notes, “introduces the element of life and the concrete.” But the “conceptualization of life in terms of chances” is a distinctly modern notion, as Lorraine Daston observes.⁴⁴ The rise of statistics in the nineteenth century offered one means to assure contingency did not become chaos. Statistical regularities allowed for individual caprice and uncertainty, but guaranteed that order in the world still prevailed. Charles Darwin built the whole edifice of the animal and plant kingdom on chance, yet his theory of evolution by natural selection enabled him to see “grandeur in this view of life.” The contingent found expression in early cinema (and photography too). But like probabilistic or evolutionary theory, cinema provided a structuring element in which to control and contain the ephemeral and uncertain. The cataloguing system of Albert Kahn’s archive or Henry Ford’s motor company was one attempt at bringing order to this cinema of the everyday. The emergence of narrative form was another. Scientific disciplines too—anthropology, human geography, and natural history, among others—whose subject matter relied upon life, gravitated to this new technology. Through disciplinary practices of observation, themselves shaped by the camera, these sciences brought meaning and purpose to the visibility of the local, contingent, and movements of ordinary life. Whether documenting men on the

lookout for dugong in the Torres Strait, the collection of biological and medical specimens in the interior of Liberia, or cinerary urns dating to the Bronze Age found near St. Andrews, the camera elevated the everyday to the status of scientific object across the disciplines of the human and life sciences.

Becoming Documents

Key to these projects and to the promise they held forth was the photographic medium and its now canonized promise of scientific accuracy and everyday intimacy.⁴⁵ Announced to the public in 1839 via the two largest and most powerful scientific bodies in Europe, photography promised to churn out numbers of observers of very high quality, making it instantly attractive to the professionalizing human and life sciences. In one of his working notebooks of 1839, William Henry Fox Talbot described looking at his photogenic drawings as looking “thro’ nature up to Nature’s God,” invoking the same Judeo-Christian language utilized by so many documenting projects.⁴⁶ A scientist himself, Talbot wrote eloquently about the inclusion of individuals outside the specialized training of scientists into the fraternity of observers, heretofore attainable only through half a lifetime of self-sacrifice. Modern science, and especially the cult of observation, requiring tireless, mechanical, accurate attention, gave verbal expression to the visual potential of photography.⁴⁷ The invention of photography put science into visual practice, validating some of its most cherished methods.⁴⁸ Photography became so quickly synonymous with science that Edgar Allan Poe could describe it in 1840, a scant year after its public announcement, as “the most extraordinary triumph of modern science.”⁴⁹

But it would be decades before the photographic record, the early version of the photographic document, truly came into its own by embracing the recording of everyday life. Recording seems so much a part of photography’s legitimate path now that it is surprising to find that the title “record” is seldom found in the literature before the last three decades of the century, appearing with increasing frequency as more and more photographic surveys began in the late 1880s and early 1890s.⁵⁰ Perhaps it is because the idea of photographic evidence was not a foregone conclusion but a matter, as Jennifer Tucker writes, of debate about skills, aesthetics, and judgment.⁵¹ It might also be that the timely confluence of photography in the hard sciences, the human sciences, and “modern” archival and document sciences in Western societies achieved an elevated status for the photographic “record” as a document invested with appropriately scientific levels of neutrality, objectivity, and reliability.⁵² These three apparently essential scientific qualities have cast the

photographic archive as a passive resource, “to be mined when useful, ignored at whim.”⁵³ And yet the essays in this volume bear out the curious power of the photographic medium to produce what Talbot called “evidence of a novel kind.”⁵⁴ That novelty rests not only in the “unobserved and unsuspected” detail found in photographic images, and in the manner of their recording, as Talbot claimed, but also, as is crucially addressed in this volume, in the practices of making, archiving, circulating, and remaking quantities of these photographic documents.⁵⁵ Photographs and films, infused as they are with the interests of makers, collectors, and users, are documents that tell us a great deal about evidence in the legal system, the formation of the historical imagination, and the way planetary scientists generate research topics. They also tell us about the changing values placed on photographic and film material.

Over the years, there have been many attempts to identify where exactly photographic and film documents acquire their evidentiary power. Many of them can be organized under the two titles of indexicality (the causal relationship) and mimesis (the resemblance relationship), although these terms are still contested.⁵⁶ These two theories, along with later interventions by Tagg and Sekula asserting the role of society and institutional regimes, have historically paid attention to the process of making photographs and films.⁵⁷ How photographic and filmic documents come into being and acquire trust remains a crucial question—one addressed by the authors in this volume as well. As a result of the digital revolution, the chemistry and format of photographs and films have recently dominated discussions of making and medium specificity.⁵⁸ Taking archives as an aspect of medium specificity as we do in this volume leads, however, to a broadening of the debates originating in and responding to indexicality and mimesis. Previously, there has not been much question about who “makes” a photographic or film document. In this volume, court judges, collectors, scientists, librarians, archivists, students, and businessmen are added to cinematographers and photographers as “makers” of photographic documents. The invention of photography, after all, was not just a technological achievement, but “the cultural invention of a new medium of seeing.”⁵⁹

Like many theories about photography that have been influenced subtly by addressing only the single image, indexicality requires a one-to-one causality, the “this” of language. But much more is at play in the evidentiary status of photography that goes beyond the indexical nature of the single image. What happens when we consider the abundance produced through photography and film, which has led to an “ineradicable surfeit” of detail that characterizes photography and film as objects and the archives that contain them?⁶⁰

The individual image is submerged under the sheer weight of numbers: the 400,000 prints, negatives, and digital images of the United States Geological Survey,⁶¹ the 100 million images of Corbis, the complete map of the Earth every three years achieved with LANDSAT. These archives generate evidence from photographs in ways that build on one person's trust in an individual photograph; discipline that trust through scientific constraints that reflect, for instance, anthropological, art historical, or archaeological agendas; and, finally, appeal to the mass of documentary materials gathered.

In the late nineteenth century, photographs became a part of documentary sources that historians debated when considering the nature of their craft. The belief that photography, properly disciplined, could be harnessed in the production of historical facts was premised on the control of the production of visual images.⁶² The conditions of making were regarded as critical to a photograph's authority as a documentary source. But the value of photographs and films as historical objects might not be "because photographs accurately record what places looked like in the past." Nor is it because the photograph was, in Nesbit's words, "a detailed blank," whose only shape was imposed by external forces.⁶³ Their value might lie instead, as authors in this volume posit, in the "production, circulation and consumption of photographs that produce and reproduce the imagined geographies of the social group or institution for which they were made."⁶⁴ The material properties of photographs, and the physical affect of masses of photographs goes beyond an examination of the effect of image production or content. Indeed, "that the formal qualities of images themselves may be in large part irrelevant is suggested by their historical trajectories and the radical revaluations that they undergo."⁶⁵ The size, the shape, the mounting, the presentation, and the mass of photographic materials—their physicality—are all equally valid sources of historical information.⁶⁶ This presents an argument not about what photographs *represent* but about what they *do* and particularly what they do in large groups, as cultural documents. Singularity, in any sense of the word or deed, does not enter into documenting projects, nor does it, as Blaschke points out, follow Benjamin's model of endless reproduction. There is always a physical limit on photographic and in particular digital reproduction. Documenting projects do not produce single (although they do create iconic) representations, but massed representation. And it is here, in the copiousness of material captured by the camera, and in the photographic and film records produced (themselves material objects), where the evidentiary weight of these documenting impulses can be found.⁶⁷ This volume intends to broaden the debate about photographic documents beyond the concepts of mimesis and indexicality, whose presence is undeniable. We focus on a series of

practices in which photography and film, in particular documenting projects, engage in order to tease out some new ways of negotiating this difficult material in groups, not in one photograph or frame of film at a time. The authors take very seriously the abundance of photographic material, rather than its individuality.

A surfeit (of details or numbers) can be seen as excessive, “a luxury” in Geimer’s words, or it can be seen as abundance, potential or latent creative power. When the photographic surfeit is treated as excessive, it lives a limited life, constrained by its original intentions. To turn from seeing surfeit as excess to seeing it as abundance is a precondition for its recirculation. When excess becomes abundance, for instance at the point of disciplinary division between cultural and physical anthropology, as in Edwards’ essay (chapter 5), or institutional reorganization under an increasingly present notion of “photographic,” the subject of Wilder’s article (chapter 9), the stage is set for a relational transformation that sets the object in motion once again: from structure to process, from singularity to mass, from disappearance to becoming (dead to living), and from periodicity to totality. As Edwards notes, often the shift in attitude from one of excess toward one of abundance accompanies a radical shift in the sorts of photographs that are made and in the way that the everyday in photography and in human life is engaged. This engagement, or interaction between photography and film and people and places, is where “the full meaning of the content of a photographic document resides.”⁶⁸

Contemplating “the action in which [photographs and films] participate,”⁶⁹ we find that photographic materials change the way courtrooms work, the way archives are constructed, and the way humans tell history. Photography and film are used to “see new things” (Vertesi, chapter 4) from a new perspective (Geimer, chapter 3) and with particular sets of disciplinary eyes (Edwards, chapter 5). These records, and the archives in which they are located, live and gain evidentiary force through their circulation and recirculation across both space and time.⁷⁰

Circulation

Writing about scientific objects as if they have biographies implies that they have lives that stretch into the past and project into the future. We not only recognize photographs, we rearticulate them and refigure them into historical accounts matching our own experience.⁷¹ Originally, the photographic documents we investigate were made with a specific purpose in mind: portraying Arthur Orton, or Olympia or the collection catalogue. Although photographs and films can be exchanged and repurposed, they can never entirely shed the

conditions of their making. Even in the endless copies of some photographs, the material traces of their making are apparent. Although the division into making, exchanging, and repurposing seems very close to Tagg's model of making, circulating, and consumption,⁷² what we are actually talking about is not the economy of consumption but the economy of documents and their evidential currency. In the consumption model, there is an assumed passivity on the part of photographic and film documents. In the economy of documents, the photographs and films play an active part.

While the traces of the past live on in the visual document, the future is a precondition for their circulation and rebirth. The expectation of the future invested the photographic and film record with an even greater degree of veracity. "To trust that a thing we know is real," observed the philosopher Michael Polanyi, "is to feel that it has independence and power for manifesting itself in yet unthought of ways in the future."⁷³ Here rested the power of the photograph and film as scientific documents. They were themselves capable of becoming, of acting upon the world both in the present and in some unimagined future. Sometimes their resurrection, as in the case of Nazi-produced films and photographs reclaimed by disability activists, may "have a redemptive second life," as Ginsburg notes (chapter 7), "documenting the world in an entirely different way than was originally intended."

Photographs and films have, in short, the potential of vitality. Perhaps this is why Bergson's vitalist philosophy had a particularly strong influence on French film criticism of the 1920s and upon later realist film theorists such as Siegfried Kracauer. Among film critics like Louis Delluc, film's affinity for "life itself" became a focus of attraction and contemplation. We should not forget that Bergson's vitalism, which so informed Kracauer's association of film with the "flow of life's rendition of the everyday," was itself beholden to turn-of-the-century life sciences and to a philosophy not of machines but of living beings.⁷⁴ Bergson rejected a mechanical notion of time as a series of discrete, divisible moments—captured in the still plates of Étienne-Jules Marey's chronophotograph. Time was instead an endless flow. "Duration," Bergson wrote, "is the continuous progress of the past which gnaws into the future and which swells as it advances."⁷⁵

In the period between the two world wars, the attraction of holism across the human and life sciences drew attention to the relationality of being in place and time. "Wherever anything lives, there is, open somewhere, a register in which time is being inscribed," Bergson wrote. Such a perspective put the past in a different relation to the present and future. It suggests, as the anthropologist Tim Ingold writes, that the "life of every being, as it unfolds, contributes

at once to the progeneration of the future and the regeneration of the past.”⁷⁶ This is the action of films and photographs as living documents. C. C. Fagg, an active participant in Britain’s regional survey movement, where the camera served as the observational and recording instrument of choice, argued in 1930 that “the roots of the future are in the past.” The life of the region was always in a state of becoming. It “presents,” Fagg suggested, “a mosaic of survivals and developments from the past together with incipient tendencies foreshadowing the future.”⁷⁷

The documentary impulse was as much about the future as it was about a past, absent, but never extinguished. Unlike the projects they discuss, this volume does not have any claim to coverage of the subject. It is instead a beginning, a series of histories about a certain impulse that can no doubt be found in many more projects, many more decades, and many more archives to come.

Notes

1. John Tagg, *The Disciplinary Frame: Photographic Truths and the Capture of Meaning* (Minneapolis: University of Minnesota Press, 2009), xvi.

2. H. D. Gower et al., *The Camera as Historian: A Handbook to Photographic Record Work for Those Who Use a Camera and for Survey or Record Societies* (London, 1916). For more on this title see Elizabeth Edwards, *Camera as Historian* (Durham: Duke University Press, 2012).

3. Blaschke, this volume, chapter 10.

4. Gillian Rose, “Practising Photography: An Archive, a Study, Some Photographs, and a Researcher,” *Journal of Historical Geography*, 26:4 (2000): 555–71; Joan Schwartz, “‘The Geography Lesson’: Photographs and the Construction of Imaginative Geographies,” *Journal of Historical Geography* 22 (1996): 16–45; Schwartz, “‘We Make Our Tools and Our Tools Make Us’: Lessons from Photographs for the Practice, Politics, and Poetics of Diplomats,” *Archivaria* 40 (1995): 40–74; Paula Amad, *Counter-Archive: Film, the Everyday and Albert Kahn’s Archives de la Planète* (New York: Columbia University Press, 2010); Elizabeth Edwards, *Raw Histories: Photographs, Anthropology, and Museums* (Oxford: Berg, 2001).

5. John Tagg, *The Burden of Representation: Essays on Photographies and Histories* (London: Macmillan, 1988), was a series of essays that had been published and given as lectures since at least 1979. Allan Sekula, “The Body and the Archive,” in *The Contest of Meaning: Critical Histories of Photography*, ed. Richard Bolton (Cambridge: MIT Press, 1989), 343–88.

6. On ruins, objects, and imperial formations, see Anne Laura Stoler, ed., *Imperial Debris: On Ruins and Ruination* (Durham: Duke University Press, 2013).

7. See, among many others, W. J. T. Mitchell, *What Do Pictures Want? The Loves and Lives of Images* (Chicago: University of Chicago Press, 2005); Schwartz, “We Make Our Tools”; Elizabeth Edwards, “Unblushing Realism and the Threat of the Pictorial: Photographic Survey and the Production of Evidence 1885–1918,” *History of Photography* 33, no. 1 (February 2009): 3–17.

8. W. J. T. Mitchell coined this term in the 1990s, while Martin Jay used a similar term, the “visual turn,” applied to visual studies. For an overview of the history of these movements see

Margaret Dikovitskaya, *Visual Culture: The Study of the Visual after the Cultural Turn* (Cambridge: MIT Press, 2005), 47–64.

9. Pamela Smith, “Art, Science, and Visual Culture in Early Modern Europe,” *Isis* 97 (2006): 85. For an early focus on representation in science and its importance to the realist-constructivist debates within STS in the 1980s, see Ian Hacking, *Representing and Intervening: Introductory Topics in the Philosophy of Natural Science* (Cambridge: Cambridge University Press, 1983), and Michael Lynch and Steve Woolgar, eds., *Representation in Scientific Practice* (Cambridge: MIT Press, 1990). Bruno Latour’s essay, “Drawing Things Together,” in *Representation in Scientific Practice*, Lynch and Woolgar, was an explicit intervention in this debate.

10. On the importance of the visual in different epistemic cultures, see Peter Galison, *Image and Logic: A Material Culture of Microphysics* (Chicago: University of Chicago Press, 1997). On scientific persona, see Lorraine Daston and Peter Galison, *Objectivity* (London: Zone Books, 2007). For an entry into scholarship on the permeability of scientific images across different cultural domains, see David Kirby, *Lab Coats in Hollywood: Science, Scientists, and Cinema* (Cambridge: MIT Press, 2011); Hannah Landecker, “Microcinematography and the History of Science and Film,” *Isis* 97 (2006): 121–32; Gregg Mitman, *Reel Nature: America’s Romance with Wildlife on Film*, 2nd ed. (Seattle: University of Washington Press, 2009); David Serlin, ed., *Imagining Illness: Public Health and Visual Culture* (Minneapolis: University of Minnesota Press, 2010); Pamela Smith, *The Body of the Artisan: Art and Experience in the Scientific Revolution* (Chicago: University of Chicago Press, 2006); Jennifer Tucker, *Nature Exposed: Photography as Eyewitness in Victorian Science* (Baltimore: Johns Hopkins University Press, 2005).

11. Lisa Cartwright, *Screening the Body: Tracing Medicine’s Visual Culture* (Minnesota: University of Minnesota Press, 1995). See also Fatimah Tobing Rony, *The Third Eye: Race, Cinema, and Ethnographic Spectacle* (Durham: Duke University Press, 1996); Alison Griffiths, *Wondrous Difference: Cinema, Anthropology, and Turn-of-the-Century Visual Culture* (New York: Columbia University Press, 2002).

12. Adrian J. Ivahkiv, *Ecologies of the Moving Image: Cinema, Affect, Nature* (Waterloo: Wilfred Laurier University Press, 2013).

13. Jennifer Tucker, “The Historian, the Picture and the Archive,” *Isis* 97 (2006): 112.

14. This is a concept that has spread from art history to anthropology and material culture studies and beyond. See for instance Alfred Gell, *Art and Agency* (Oxford: Oxford University Press, 1998), or Mitchell, *What Do Pictures Want?*

15. Edwards, *Raw Histories*; Chris Pinney, *Camera Indica: The Social Life of Indian Photographs* (Chicago: University of Chicago Press, 1998).

16. Rose, “Practising Photography,” 555–71.

17. There are many scholars working on similar ideas of sociomateriality in anthropology, social geography, art history, and STS. The most recent use of these ideas pertaining to photographic and film histories specifically are those of Edwards, *Raw Histories*, and Edwards, “Photography and the Material Performance of the Past,” *History and Theory* 48 (2009): 130–50; Schwartz, “We Make Our Tools”; Amad, *Counter-Archive*; James Hevia, “The Photography Complex, Exposing Boxer Era China (1900–1901), Making Civilization,” in *Photographies East: The Camera and Its Histories in East and Southeast Asia*, ed. Rosalind C. Morris (Durham: Duke University Press, 2009), 79–119; Pinney, *Camera Indica*; Costanza Caraffa, ed., *Photo Archives and the Photographic Memory of Art History* (Berlin: Deutscher Kunstverlag, 2012).

18. Klamm, chapter 8, this volume; Rose, "Practising Photography"; and Amad, *Counter-Archive*.
19. Edwards, *Raw Histories*, 13.
20. Lorraine Daston, "The Coming Into Being of Scientific Objects," in *Biographies of Scientific Objects*, ed. Lorraine Daston (Chicago: University of Chicago Press, 2000), 3.
21. See Tucker, *Nature Exposed*, and Janet Vertesi, chapter 4, this volume.
22. Edwards, *Raw Histories*, 13–14.
23. Edwin A. Grosvenor, *Constantinople* (Boston: Roberts Brothers, 1895), as discussed in Tamar Y. Rothenberg, *Presenting America's World: Strategies of Innocence in National Geographic Magazine, 1888–1945* (London: Ashgate, 2007). See also Philip Pauly, "The World and All That Is in It: The National Geographic Society, 1888–1918," *American Quarterly* 31 (1979): 517–32.
24. Costanza Caraffa, "From 'Photo Libraries' to 'Photo Archives': On the Epistemological Potential of Art-Historical Photo Collections," in *Photo Archives*, ed. C. Caraffa, 19.
25. Carolyn Steedman, *Dust: The Archive and Cultural History* (New Brunswick, NJ: Rutgers University Press, 2002).
26. Donna Haraway, "The Persistence of Vision," in *The Visual Culture Reader*, ed. Nicholas Mirzoeff (London: Routledge, 2001), 191–98.
27. Michel de Certeau, "L'Espace de l'Archive ou la Perversion du Temps," *Traverses* 36 (1986): 5.
28. Elizabeth Edwards notes that one of the unifying factors in the many English photographic surveys is their "cohesive sense of purpose," in Edwards, "Unblushing Realism and the Threat of the Pictorial Photographic Survey and the Production of Evidence, 1885–1918," *History of Photography* 33 (2009): 3–17. It is this sense of purpose that we wish to address.
29. Faye Ginsburg, "Screen Memories: Resignifying the Traditional in Indigenous Media," in *Media Worlds: Anthropology on New Terrain*, ed. Faye D. Ginsburg, Lila Abu-Lughod, and Brian Larkin (Los Angeles: University of California Press, 2002), 39–57.
30. Jérôme Lemy, *La carte du ciel* (Paris: EDP Sciences, 2008).
31. Edwards, "Photography and the Material Performance of the Past," 131.
32. Sudeshna Guha, "The Visual in Archaeology: Photographic Representation of Archaeological Practice in British India," *Antiquity* 76 (2002): 93–100; Edwards, *Raw Histories*.
33. William Stott, *Documentary Expression and Thirties America* (Chicago: University of Chicago Press, 1986), 11.
34. Anne Whiston Spirn, *Daring to Look: Dorothea Lange's Photographs and Reports from the Field* (Chicago: University of Chicago Press, 2008), 4.
35. Mary Ann Doane, *The Emergence of Cinematic Time: Modernity, Contingency, the Archive* (Cambridge: Harvard University Press, 2002), 22.
36. Amad, *Counter-Archive*, 134.
37. Amad, *Counter-Archive*.
38. See Phillip W. Stewart, *Henry Ford's Moving Picture Show: An Investigator's Guide to the Films Produced by the Ford Motor Company, Volume One: 1914–1920* (Crestview, FL: PMS Press, 2011).
39. Joseph Hackin, "In Persia and Afghanistan with the Citroën Trans-Asiatic Expedition," *Geographical Journal* 83 (1934): 361. On film and the Torres Strait Expedition, see Griffiths, *Wondrous Difference*. On the Citroën expeditions, see Peter J. Bloom, *French Colonial Documentary: Mythologies of Humanitarianism* (Minneapolis: University of Minnesota Press, 2008), 65–94.

40. John Grierson, in *Grierson on Documentary*, edited and compiled by Forsyth Hardy (London: Faber and Faber, 1966), 13, 146.
41. Commonwealth Institute, Tallents Papers, file 25.
42. Doane, *Emergence of Cinematic Time*, 22.
43. Hannah Landecker, "Cellular Features: Microcinematography and Film Theory," *Critical Inquiry* 31 (2005): 907.
44. Doane, *Emergence of Cinematic Time*, 12; Lorraine Daston, "Life, Chance, and Life Chances," *Daedalus* 137, no. 1 (2008): 7.
45. Ginsburg, chapter 7, this volume.
46. Larry J. Schaaf, *Records of the Dawn of Photography: Talbot's Notebooks P&Q* (Cambridge: Cambridge University Press, 1996), P55, May/June 1839.
47. This has been addressed in many places like Tucker, *Nature Exposed*, 20, and in essays by Charlotte Bigg, Jimena Canales, and Kelley Wilder in Lorraine Daston and Elizabeth Lunbeck, eds., *Histories of Observation* (Chicago: University of Chicago Press, 2011).
48. Talbot even presented the discovery of his process to the Royal Society on 31 January 1839, as a validation of the inductive method "put into practice," upholding Jean Baptiste Biot's assertion to the Academie des Sciences in Paris only weeks earlier, that the daguerreotype was a "retina placed at the disposal of physicists." Talbot's statement about induction, published as "Some Account of the Art of Photogenic Drawing" in the *Philosophical Magazine*, 3rd ser., 14, no. 88 (1839): 196–211 and in the *Athenaeum*, *Mechanic's Magazine*, and the *Literary Gazette*, has recently been remarked on by authors like Tucker, *Nature Exposed*, 20–21, and Douglas R. Nickel, "Talbot's Natural Magic," *History of Photography* 26, no. 2 (Summer 2002): 32–140.
49. Edgar Allan Poe, "The Daguerreotype," *Alexander's Weekly Messenger* no. 15 (January 1840), reproduced in Alan Trachtenberg, *Classic Essays on Photography* (New Haven: Leet's Island Books, 1980), 37–38.
50. In the database Photographs Exhibited in Britain 1839–1860 (<http://peib.dmu.ac.uk/> accessed 20 June 2010), the term "record" does not occur as a part of a single exhibit, while the Royal Photographic Society Exhibitions between 1870–1915 (<http://erps.dmu.ac.uk/>, accessed 20 June 2010) shows only 115 exhibits titled with the word "record" from a selection of many thousand exhibits. Although this is hardly a rigorous study, it is indicative of the vocabulary deployed at the time.
51. Tucker, *Nature Exposed*, 194; and Tucker, chapter 2, this volume.
52. Since Sekula's influential "The Body and the Archive" was published in 1986, there have been many assertions that the evidential power of photographs in archives relies as much on the institutional practices of archives as it does on the representational powers of photographs. Specifically, Edwards suggests that archiving was an integral part of the establishment of photographic "truth values" in Edwards, "Photography and the Material Performance," 138. Joan Schwartz likewise suggests the confluence of the rise of photographic meaning and the notion of modern archiving in "'Records of Simple Truth and Precision': Photography, Archives, and the Illusion of Control," *Archivaria* 50 (2002): 1–40.
53. Elizabeth Edwards, "Photographs: Material Form and the Dynamic Archive," in *Photo Archives and the Photographic Memory of Art History*, ed. Costanza Caraffa (Berlin: Deutscher Kunstverlag, 2011), 47.
54. William Henry Fox Talbot, *The Pencil of Nature* (London: Longman, Brown, Green & Longmans, 1844–46), plate 3.

55. Talbot, *The Pencil of Nature*, plate 13.

56. The original use of C. S. Pierce's "index" in the art world comes from a two-part article by Rosalind Krauss, "Notes on the Index: Seventies Art in America," *Source* vols. 3 and 4 (Spring and Autumn 1977). Two of the most influential works on photography and film as philosophical objects are Roland Barthes, *Camera Lucida: Reflections on Photography*, trans. Richard Howard (New York: Hill and Wang, 1981), and André Bazin and Hugh Gray, "The Ontology of the Photographic Image," *Film Quarterly* 13, no. 4 (Summer 1960): 4–9. For recent arguments adding to the debate see James Elkins, *Photography Theory*, The Art Seminar (New York: Routledge, 2006), and especially François Brunet's contribution in that volume and Douglas R. Nickel, "History of Photography: The State of Research," *Art Bulletin* 83, no. 3 (September 2001): 548–58.

57. For instance Joel Snyder and Neil Walsh Allen, "Photography, Vision and Representation," *Critical Inquiry* 2:1 (Autumn 1975): 143–69.

58. Mary Ann Doane, "Indexicality and the Concept of Medium Specificity," in *The Meaning of Photography*, ed. Robin Kelsey and Blake Stimson (New Haven: Yale University Press, 2008), 3–14.

59. Tucker, *Nature Exposed*, 239.

60. Chris Pinney and Nicolas Peterson, eds., *Photography's Other Histories* (Durham: Duke University Press, 2003), 6. It is a testament to the power of the canonical image, and the modernist histories of photography and film, that indexicality continues so strongly in photographic writings without addressing the multiple image or even multiple details.

61. United States Geological Survey Photo library at <http://library.usgs.gov/photo/#/> (accessed 25 October 2010).

62. Edwards, *Camera as Historian*, 55–56.

63. Molly Nesbit, *Atget's Seven Albums* (New Haven: Yale University Press, 1992), 16.

64. Rose, "Practising Photography," 555.

65. Pinney and Peterson, *Photography's Other Histories*, 3.

66. Elizabeth Edwards and Janice Hart, eds., *Photographs Objects Histories: On the Materiality of Images* (London: Routledge, 2004), 2; Rose, "Practising Photography"; Edwards, "Photography and the Material Performance"; Schwartz, "We Make Our Tools," 56. Also see Klamm, chapter 8 in this volume.

67. Schwartz, "We Make Our Tools," 56.

68. Schwartz, "We Make Our Tools."

69. Schwartz, "We Make Our Tools," 52.

70. For more on this see Pinney, *Camera Indica*; Edwards, *Raw Histories*; and Deborah Poole, *Vision, Race, and Modernity: A Visual Economy of the Andean Image World* (Princeton: Princeton University Press, 1997).

71. Edwards, *Raw Histories*, 22.

72. "The history of photography is, above all, the history of an industry catering to such a demand: a history of needs alternatively manufactured and satisfied by an unlimited flow of commodities; a model of capitalist growth in the nineteenth century." Tagg, *Burden of Representation*, 37.

73. Polanyi, quoted in Hans-Jörg Rheinberger, "Cytoplasmic Particles: The Trajectory of a Scientific Object," in *Biographies of Scientific Objects*, ed. Lorraine Daston (Chicago: University of Chicago Press, 2000), 294.

74. Amad, *Counter-Archive*, 302.

75. Henri Bergson, *Creative Evolution*, trans. Arthur Mitchell (New York: H. Holt and Co., 1911), 7.

76. Tim Ingold, *The Perception of the Environment: Essays on Livelihood, Dwelling, and Skill* (London: Routledge, 2000), 143.

77. David Matless, "Regional Surveys and Local Knowledges: The Geographical Imagination in Britain 1918–1939," *Transactions of the Institute of British Geographers*, n.s. 17, no. 4 (1992): 468.