A Basis for Comparison: The Thomas Walther Collection as Research Collection

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What is it? What is an object, a particular work of art? This question, which lies at the heart of art-historical inquiry, is itself comprised of others: who made this object? When? Where? What is it made of? The study of archival materials that relate to an artwork, such as provenance, exhibition records, and written accounts by contemporaries and historians, is vital to such investigation, but initially, how the art-historical object is defined by these questions is an empirical problem, which is derived from observation of the object itself. Once we start to answer these basic questions, we can begin to place the object in the larger art-historical narrative and scholarship—a process that is the result of comparing these answers to those derived from other objects, other artists, other periods. Indeed, the reflexive use of comparisons seems as fundamental to art-historical inquiry as the description and analysis of objects, even when it is not explicitly recognized as such.[1]

Comparative analysis is thus central to art-historical inquiry, and it is a core methodological principle as well for conservation and conservation science, both of which play a significant role in characterizing the art object itself and in classifying it relative to its place in the art-historical context, as is evident here in the collective research conducted as part of the Walther project. These qualitative and quantitative analyses not only help us to better understand the specific artworks themselves (in this case, photographs [fig. 1]), they also form a basis for comparisons with other works by the same artist, other works within the collection, and works across multiple collections as well.

Conservation and conservation science often bring particular methods and sets of data to the task of art-historical investigation. For instance, observation of works by the same artist reveals patterns of material use as well as technique in using those materials, while deeper

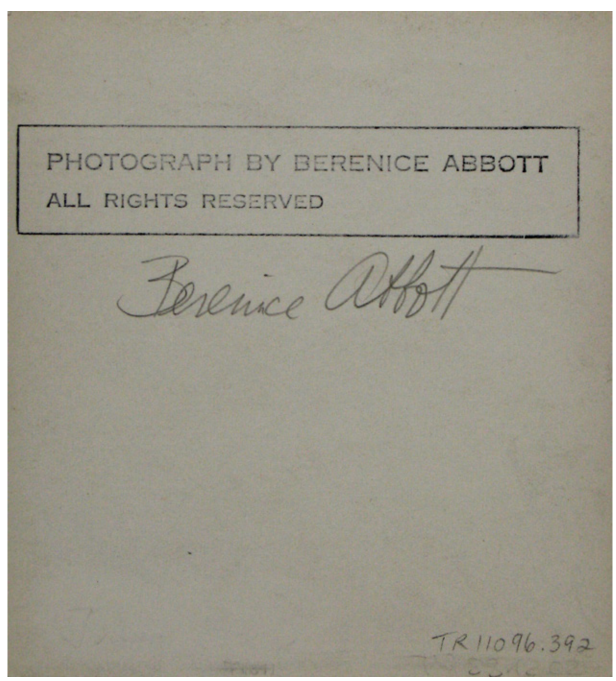


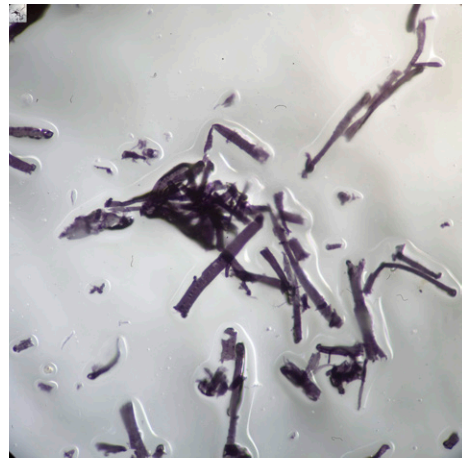
fig. 1 Berenice Abbott. *James Joyce* (recto and verso). 1926. Gelatin silver print, 1935–55, image (irreg.): 4 ⅜ × 3 ¹³⁄₁₆" (11.1 × 9.7 cm); sheet (irreg.): 4 ⁷⁄₁₆ × 4 ⅛" (11.2 × 10.5 cm). The Museum of Modern Art, New York. Abbott-Levy Collection funds, by exchange (MoMA 1598.2001). © 2014 Berenice Abbott/Commerce Graphics. The following figures present detailed material and technical information about this photograph and are representative of the research conducted on many of the photographs in the Walther Collection.

research on the particular object can include direct analysis of its materials to establish their chemical composition and physical performance. Knowing what paint Jackson Pollock used is critical to identifying his works, for example, and also to the understanding of his development of a distinctive style that placed him well outside the norms of historical painting practice.[2] More subtly, a better knowledge of the white pigments employed by Piet Mondrian can enhance our insight into the effects one sees in his paintings by understanding the fundamental properties of those pigments.[3] Such information is derived from instrumental analysis of microscopic samples taken from the work or, increasingly, using instruments that collect data directly from the work without sampling.[4] Material comparison can be critically important in the medium of photography, where original artworks often exist as multiples that are sometimes created years apart using the same negative but printed with different materials and artistic intentions, such as is evident in examining Edward Weston's switch from platinum to gelatin silver printing, a key transition in his artistic development. Essential to such analysis is, once again, the use of comparative data, not only from works by the specific artist but also from reference collections of materials, which are a fundamental and invaluable resource. Reference collections of art materials are, by definition, material samples of known provenance. Often the reference collection, the material archive, will also contain analytical data of some kind for comparison by other researchers analyzing similar material samples.

Material archives have long been a part of conservation research, one of the first being the Forbes Collection. Begun around 1910 as a collection of historical artists' materials to support Edward Waldo Forbes's course on Italian painting at Harvard's Fogg Art Museum, today samples from the Forbes pigment collection reside not only at Harvard but at numerous other institutions; taken as a whole, the collection represents an essential attribute of all truly valuable reference collections, which is a provenance of the sources of the samples themselves.[5] Although the Forbes Collection is known principally as a pigment collection, it is in fact broader than that, comprising samples of artists' materials such as historic paint media and varnishes as well. In addition, the collection of pigments has come to serve other research uses beyond its initial purpose as a reference to study Renaissance Italian painting. Because the collection was built during the first half of the twentieth century, it can also be viewed and used as an archive of pigment manufacture during that time. It thus offers comparative data for the history of pigment making and a resource for comparing pigment samples from objects made during that period, demonstrating that material archives can often find applications beyond the vision of their original creators.

Particularly useful have been those reference collections dedicated to paper, such as the one at the National Gallery of Art. A prime value of such paper collections is the identification of watermarks as a means to date the paper as well as the maker. The material constituents of a paper collection, such as the fiber content of the individual papers (fig. 2), have become increasingly valuable as analytical equipment and techniques to aid such characterization have become more commonly available to the conservation field, as demonstrated here in the work of Hanako Murata and Lee Ann Daffner.

Indeed, this increased analytical capacity and sophistication have expanded the idea of the reference collection to include not only materials of well-documented provenance but data collections of well-documented provenance as well. The Infrared & Raman Users Group (IRUG) is one of the oldest and most widely used of such collections, in which the material sources and analytical protocols for deriving the data are both clearly detailed.[6] The IRUG collection of reference data is not deposited in a single place but rather is a searchable database from which members can compare their analytical results to the reference materials and the data in the database. For instance, if there is an adhesive or coating on a work, a sample can be analyzed via infrared spectroscopy, and similar spectra are then called up for comparison to identify the closest match. This



FIBER TYPE	FIBER PERCENT	FIBER SPECIES	FIBER COUNT
Softwood bleached sulfite alpha	100%	Spruce and/or hemlock	105
Rag		Cotton	Trace

fig. 2 Fiber analysis is conducted by taking a sample of material from the verso of the photograph and examining it under a microscope (top) to identify the specific fibers and quantity of each fiber in the paper. Fiber analysis on this print indicates that the photographic paper is almost entirely comprised of bleached spruce and/or hemlock fibers (bottom). This data can be compared with fiber analysis of other papers of known provenance in an effort to determine a date range; in this case, the results are consistent with papers manufactured between 1935 and 1970. Photo: Department of Conservation, MoMA

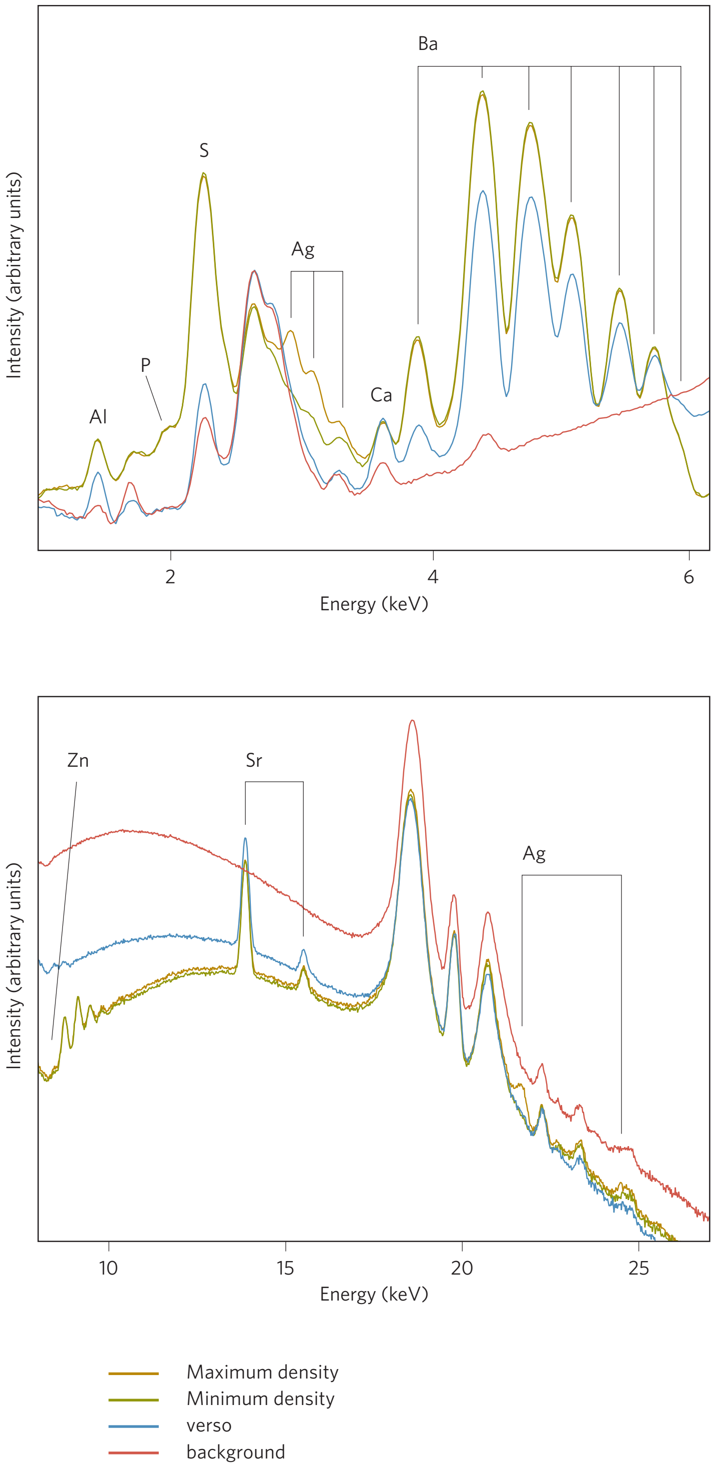


fig. 3 Visual examination of the photograph strongly suggested that it was a gelatin silver print, which was confirmed through X-ray fluorescence (XRF) analysis of both the recto and verso. These two graphs were derived by interpreting the data read off the instrument and assigning the correct element to the peaks shown in the graph. The lines in each graph represent the maximum and minimum image-density areas from the recto and the values from the verso side as well as the XRF instrument signal background. The upper graph shows elements identified through the presence of peaks in the lower energy range (0 to 6 keV): Al (aluminum), P (phosphorus), S (sulfur), Ag (silver), Ca (calcium), and Ba (barium). The lower graph shows elements identified through the presence of peaks in the higher energy range (7 to 27 keV): Sr (strontium), Ag (silver), and traces of Zn (zinc). Courtesy Ana Martins

would be one of the approaches to identifying the paint Pollock used in the example above. It is worth noting that such analysis is not simply a mechanical process or computational result but one that requires a degree of judgment. Differences in results can be due to an unknown element in the sample, deterioration or aging of the material of interest, as well as differing protocols, sampling techniques, or sensitivity of the detection method itself, all further evidence of the critical role of data interpretation by experienced scientists in rigorous material studies.

It is fortunate that reference collections that make use of sophisticated analytical tools have been incorporated at roughly the same time that the range of artist materials has started to increase exponentially. Synthetic polymers, singly and as constituents in complex formulations or as composites, have been present in the work of artists for much of the twentieth century. The task of characterizing this huge universe of materials is daunting, and conservators and conservation scientists routinely turn to industrial literature to acquire key data and research information. Industrial paint literature has been central to characterizing the paints used by many modern artists, for example.[7] The photographic film and paper industry, a truly modern phenomenon as well, was for many decades one of the most extensively researched and recorded, due to the size of the market for these materials and their general penetration not just into fine-art collections but into the culture at large.

Certainly when it comes to furthering our materials-based understanding of the history and development of the photograph as an artistic medium, the Messier Collection of photographic papers is critical, a fact amply illustrated by Paul Messier's contribution to this project. Consisting of more than 5,000 paper samples, this material archive offers researchers the opportunity to probe in numerous ways the complex medium of photographic papers, from early in its commercial history to the late twentieth century, thus providing an incomparable resource to better establish how, when, where, and by whom fine-art photographs were made.[8] The Messier Collection has been a fundamental tool for the research conducted on the Walther Collection, both directly and through the utilization of past research based on the collection. Protocols from that prior research, as well as other protocols, have been incorporated into the examination and instrumental analysis of the photographs in the Walther Collection. These include elemental analysis of the baryta and emulsion layers using X-ray fluorescence spectroscopy (XRF; fig. 3), thickness measurements (fig. 4), Fourier Transform Infrared spectroscopy (FTIR), texture imaging (fig. 5), gloss assessment, and UV fluorescence of the photos.

The Museum of Modern Art's film stills archive represents another material collection that has greatly benefited efforts to better characterize photographs. Consisting of more than 4 million individual stills and promotional materials from the United States, England, France, Germany, Italy,

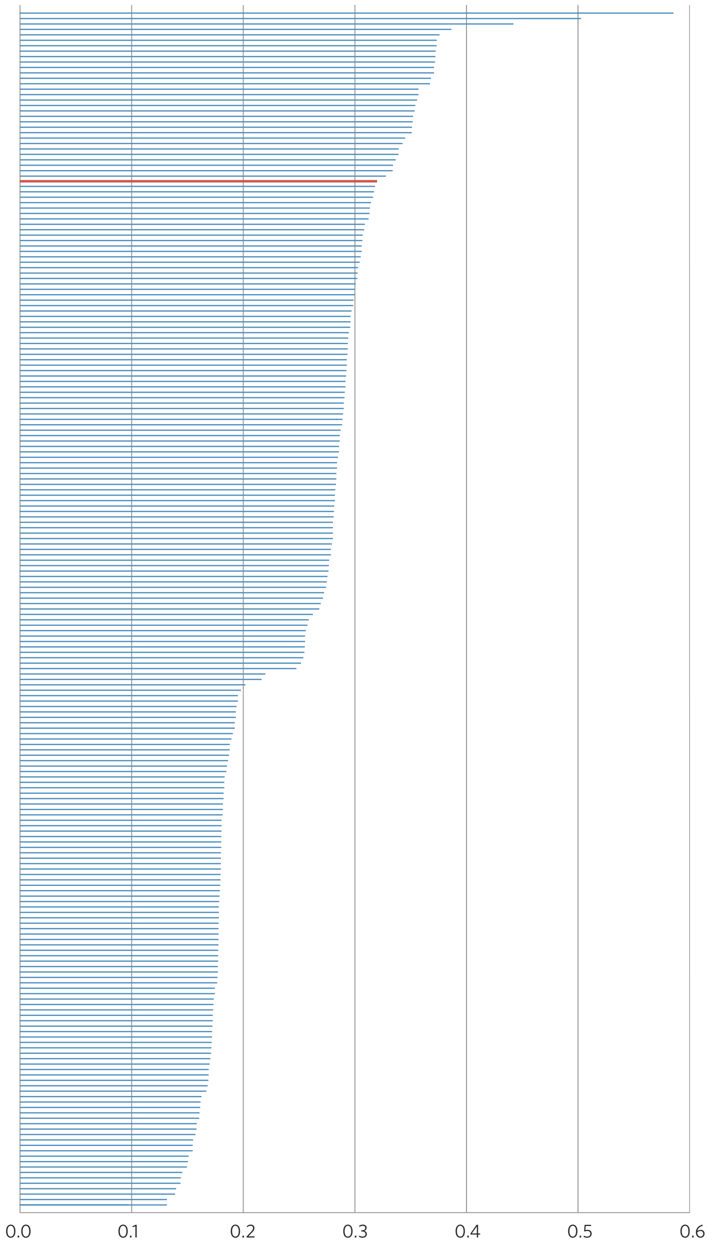


fig. 4 The thickness of the print's paper, measured with a digital micrometer, was found to be .322 mm. It is graphed here (in red) in relation to the paper thickness of other prints in the Walther Collection.

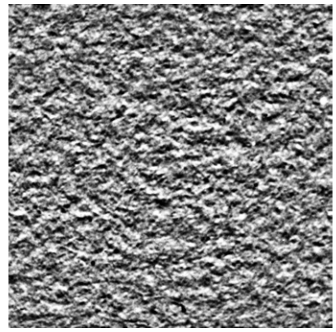


fig. 5 A view of a 6.7-by-6.7-mm detail of the recto, taken through a microscope with raking light, shows the surface texture of the photographic paper. This nondestructive imaging tool has been used to match similar papers. Photo: Department of Conservation, MoMA

Russia, and Asia, and from the earliest days of the film industry to the present, the collection is another example of one that was originally acquired for historical and documentation purposes (in this case, surrounding the history of movies) but is now valued for its material information as well. This collection, with well-documented printing dates for the photos, has been used to refine a methodology for dating photographs, and these research methods have also been central to the characterization of the photographs in the Walther Collection.[9]

Such deep characterization of the material constituents of the entire collection thus brings the Walther Collection, in addition to its art-historical importance, into the realm of the kinds of material archives and research collections outlined above. The research methods are clearly detailed and public. The photos themselves are well documented, with substantial provenance and historical research supporting them.[10] The collected data, both art-historical and scientific, can be a source of comparison for other researchers who have derived their own data through their study of similar photographs or other works by the same photographer. More broadly, the methodologies from this research can be applied to other photographs and photography collections, which in turn will further extend the field's global set of data so that new comparisons leading to new characterizations and classifications of photographs can be made. And, like other such collections, the research on the Walther Collection, both material and art-historical, will be extended and expanded in the future, offering ever more comprehensive understanding of the collection itself, its photographers, and the vital period of photography it represents—in sum, what each of these photographs is.

NOTES

1. The continued importance of comparativism to art-historical methodology was explicitly recognized, for example, in the two-day symposium on the topic convened in March 2012 at New York University's Institute of Fine Arts as part of the Mellon Research Initiative, a series devoted to the examination of the field of art history and its current practice. See www.nyu.edu/gsas/dept/fineart/research/mellon/mellon-comparativism.htm.

2. See Kirk Varnedoe and Pepe Karmel, *Jackson Pollock*, exh. cat. (New York: The Museum of Modern Art, 1998), pp. 47–56.

3. Harry Cooper and Ron Spronk, *Mondrian: The Transatlantic Paintings* (New Haven: Yale University Press, 2001), pp. 70–79.

4. For instance, historic conservation practice has usually involved taking a pigment sample from a work, then mounting it on a slide and examining it by a variety of techniques, such as using a scanning electron microscope to identify specific elements and thus determine the pigment. Recently, portable X-ray fluorescence spectrometers have been developed that can yield much the same information without the need to remove a sample from the artwork.

5. Francesca G. Bewer, *A Laboratory for Art: Harvard's Fogg Museum and the Emergence of Conservation in America, 1900–1950* (Cambridge, Mass.: Harvard Art Museum, 2010), p. 60.

6. For more on the IRUG collection, see www.irug.org.

7. See, for example, Tom Learner, *Modern Paints Uncovered: Proceedings from the Modern Paints Uncovered Symposium, May 16–19, 2006, Tate Modern, London* (Los Angeles: Getty Conservation Institute, 2007).

8. For more on the Messier Collection, see www.paulmessier.com/pm/collection.html.

9. For example, see A. Martins, L. Daffner, A. Fenech, C. McGlinchey, and M. Strlič, "Non-Destructive Dating of Fiber-Based Gelatin Silver Prints Using Near-Infrared Spectroscopy and Multivariate Analysis," *Analytical & Bioanalytical Chemistry* 402, no. 4 (2012):1459–69.

10. See the Photographs index on this website for detailed information on all the prints in the Walther Collection, including the results of the analyses described in this essay. The Materials Reference section describes many of the analytical techniques mentioned above.

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