

MAKING WATERMARKS MEANINGFUL:
SIGNIFICANT DETAILS IN RECORDING AND IDENTIFYING WATERMARKS

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Probably all of us from time to time have noted and recorded watermarks on works of art on paper. The presence of such a watermark can help establish the date and place that an artwork was made, but only if significant features of the watermark are recognized and recorded. A project of documenting and identifying watermarks for an exhibition catalogue at the National Gallery of Art showed us that there is much to learn about the study and interpretation of watermarks in paper. I would like to share with you some of the significant details to look for in a watermarked sheet, how to try to identify a watermark, and some problems in interpreting information given for published watermarks. I have included an annotated bibliography of some useful reference books as well as a few articles by some of the foremost current researchers in paper history.

The basis of the study of watermarks is that at a given period of time a specific paper mill would have on hand a limited number of papermaking molds, and these molds had a finite useful life. The practice in European mills was to have a pair of molds for each size of paper produced. In the papermaking work rhythm, the vatman immersed one mold in the vat while the coucher, his partner, couched the previously formed sheet off the other mold onto felts. Each mold generally had attached to it a bent-wire mark serving to indicate the paper's origin, size, or quality. Often additional countermarks were also attached to the mold. Each of these handmade wire marks varied slightly and produced a distinctive watermark recognizable by slight variations in the mark's shape, size, placement, and points of attachment to the mold surface, as well as by the spacing of the chain lines and laid lines. So there will be two recognizable "twin" watermarks for each pair of molds.¹⁸ In watermarks of the 15th through 17th centuries, the sewing dots are often very distinct white spots along its outlines, because the wire used to attach it was quite thick. In watermarks of the 18th century much finer wire attaches the mark and sewing dots become almost imperceptible.

In producing common paper sizes, a mill would use that size pair of molds frequently, causing wear and damage to the wire mark and mold. Common-sized paper molds are estimated to last about two years, while a mold for a less common paper, such as very large formats, could last for many years. For example, one German mill about 1820 produced its largest art paper format once every two years in quantities of 50 reams.¹⁶ Such a large mold could conceivably have a useful life of 20 years.

Accuracy in dating watermarks must be based on matching sheets of paper produced by the very same mold. The watermark to be identified must match exactly a published watermark or other mark for comparison. As well as identical size and shape, both marks must have identical placement relative to the chain lines. For example, two very similar Gothic P watermarks can have distinctly different positions relative to the chain lines, one lies between the chain lines, while the other is sewn onto one chain line. Another Gothic P mark has a crown ornament, instead of the flower ornament which distinguishes the two previous marks. To be considered identical, the marks must have the identical details or initials if any, identical countermarks, as well as the same recognizable sewing dots and the same laid line frequency (number of lines per cm) and the same chain line interval (cm between lines).

Even side by side comparison can deceive in establishing that two marks are from the same mold. Certain comparison requires superimposing the exact size images or their tracings, to see that they coincide in all significant points. The only permissible variations are those that could result from deterioration of the mold and resultant repairs.¹⁷ One example is a foolscap mark, damaged probably from the action of cleaning the mold surface with a wire brush. The three balls below the numeral "4" have been pushed over against the chain line and flattened somewhat in the process. Another mark shows the letter "S" placed to one side of a circle; another symmetrically placed letter has apparently fallen off the mold:

If a researcher is fortunate and matches a watermark with an identical published mark, then the date and place of use of the cited paper sheet can be used to infer a time period for the use of the paper mold which made both sheets. Keep in mind that some misleading citations are possible, from occasional use of a sheet produced years before or transported far from its place of manufacture.³ While most paper was probably used within a couple of years of its production, a few artists such as Whistler preferred to seek out old paper for their prints.

The number of distinct watermarks is much greater than the body of published marks. The late Alfred Schulte of the Gutenberg Museum made some discouraging calculations of the number of German watermarks used before 1600. He concluded that before 1600 there were 25,000 German watermarks. Briquet by comparison published only 16,000 watermarks for much of Europe during this same period.¹ Schulte estimated that there were 1 million European watermarks before 1800.¹⁶ Rather than letting these numbers discourage us completely, we should use them as a caution against being overly confident and hasty in watermark identification.

Another caution concerns watermarks on larger format art papers. As mentioned above, a very large mold might be in use twenty years, so that the date of a published mark might fall near the year of the mold's first use or last use. But watermarks on large art papers may frequently not be published at all because some paper historians such as Briquet and Voorn have focussed their studies on manuscripts in archives. Voorn notes that the watermarks on large-sized papers are generally not represented in Dutch archives.¹⁹ Other paper historians such as Heawood⁹ and Churchill⁴ however did examine watermarks on prints and maps and thus can be more useful in studying watermarks in large art papers.

There are several ways that we can attempt to interpret watermarks on art works, even if we cannot locate an absolutely identical published mark. Matching a paper mark to similar published watermarks can be useful in indicating the general area and date of use for a mark. But be aware that general types such as the fleur-de-lis or the IHS monogram were in widespread use across Europe. Quite different seventeenth-century versions of the IHS watermark occur on an Italian paper used for a Claude print (with a central chain line crossing the mark) and on prints by Callot on French paper (with chain lines crossing the mark at left and right). Some watermark motifs remained popular for a century or more, such as the Arms of Amsterdam in use for 150 years.¹⁵ In addition, popular watermarks were imitated in many countries, so the Arms of Amsterdam may appear on German or Italian paper. Two Dutch examples of the Arms of Amsterdam appear on a seventeenth-century drawing by Van de Velde and on a late nineteenth-century Whistler print.

We have found that we can study unpublished watermarks most successfully by assembling a body of related marks, for example, the watermarks occurring in papers used by a single artist such as Schongauer. Watermarks of profile heads reoccur on Schongauer prints, in our collection and in others, as Max Lehr has included them in an appendix on watermarks in his catalogue raisonné.¹² Comparison of such a group of watermarks will show which reoccur and help single out papers which are unusual in source or date. Even if no watermark is present, other characteristic paper features may become evident such as chain line intervals, laid line frequencies, or channeled texture.¹ Illustrations in Briquet show the wide variation possible. As an example, a Claude print on paper with a Paschal Lamb watermark with the letters "A" and "N" has a distinctive channeled effect. While another Claude print lacks a watermark, it clearly shows the same channeled effect and is thus on a closely related paper. Channeled paper is also found on some Schongauer prints. It is considered characteristic of the Italian Piedmont and Swiss mills, and probably results from the manner in which the chain line wires are attached to wooden slats below the mold surface, as discussed in an article by Theo Gerardy.⁵

In summary, we must exactly match a detailed image of watermark to a watermark of known place and date of use in order to say we have identified it. More often than not, we will not find an exact match because there are probably about a million watermarks before 1800, and perhaps only 4% of them have been published.

But even unpublished watermarks can give us information. We can learn when and where similar marks were in use, if our watermark resembles published marks. And we can document the papers that occur in the prints and drawings by one artist. By comparing the paper and watermarks that we find, we can learn to recognize the papers that reoccur and those that are uncommon or from a posthumous reprinting.

SELECTIVE BIBLIOGRAPHY FOR THE STUDY OF WATERMARKS

- 1 Charles Moïse Briquet. Les Filigranes. Dictionnaire historique des marques du papier dès leur apparition vers 1282 jusqu'en 1600. Genève, 1907; reprinted Amsterdam: The Paper Publications Society, 1968.

French text. The basic reference for European watermarks before 1600, reproducing 16,000 watermarks out of a collection of 40,000 tracings made by Briquet in European archives (not including archives in England, Russia, Spain, or Portugal). The Jubilee reprint adds 150 pages of supplementary materials in English, including indices, corrections, and an excellent essay by Allan Stevenson, "How to use Les Filigranes."

- 2 The Briquet Album. A Miscellany on Watermarks, Supplementing Dr. Briquet's Les Filigranes, by Various Paper Scholars. Hilversum, The Paper Publications Society, 1952.

Essays and separate detailed bibliographies are included on paper history in France and Belgium, Switzerland, England, and the rest of Europe, as well as Supplementary Literature to Briquet since 1907.

- 3 Curt F. Bühler. "Watermarks and the Dates of Fifteenth-Century Books." Studies in Bibliography IX (1957), pp. 217-224.

The author argues for caution in dating incunabula solely by watermark evidence and reminds the reader that the date of paper manufacture only gives at best the earliest possible date of use, but not necessarily the actual date of use.

- 4 W. A. Churchill. Watermarks in Paper in Holland, England, France, etc., in the XVII and XVIII Centuries and their Interconnection. Amsterdam: Hertzberger, 1967.

An essay on papermaking in France, England, and Holland precedes 578 illustrations of watermarks. Voorn feels the dates given for Dutch watermarks are frequently inaccurate because Churchill's research was based on collections of many single sheets of uncertain date.

- 5 Theo Gerardy. "Die Ursache der sogenannte Kannelierung des handgeschöpften Papiers." Papiergeschichte XX (1970), pp. 38-40.

The author explains vergeure cannelée (alternating light and dark bands parallel to the laid lines) as the result of how the chain wire are attached to the underlying wooden slats of the papermaking mold.

- 6 Theo Gerardy. "Die Techniken der Wasserzeichenuntersuchung." Les Techniques de laboratoire dans l'étude des manuscrits. Paris: Éditions du centre nationale de la recherche scientifique, 1974, pp. 143-157.

This article mentions subjects discussed more fully in Papiergeschichte, a paper history journal no longer published and not widely available. Comparing watermarks alone is not enough to establish the origin of sheets of paper. It is necessary to consider all the markings left by the structure of the mold surface. Gerardy's book on dating with watermarks presents his general approach: Datieren mit Hilfe von Wasserzeichen, Bückeburg: Verlag Grimme, 1964. 119

- 7 Theo Gerardy. "Probleme der Wasserzeichenforschung." Papiergeschichte IX (1959), pp. 66-73.

Gerardy sees shortcomings of Briquet's research in the incompleteness of his published oeuvre (representing ca. 3% of the marks used before 1600) and in his confused attitude to seemingly "identical" marks, assuming that physical similarity must correlate to proximity of date. Gerardy stresses that only watermarks identical in the strictest sense, e.g. from the same mold, can give accurate dates. Watermarks from the identical mold may show some alterations from wear. Gerardy recognizes these "variant identical" marks by considering if they can come from the same mold.

- 8 Thomas L. Gravell with George Miller. A Catalogue of American Watermarks 1690-1835. New York: Garland Publishing Inc., 1979.

This catalogue reproduces Dylux prints of 734 watermarks and gives historical data on 200 American papermaking mills. Bibliography.

- 9 Edward Heawood. Watermarks, Mainly of the 17th and 18th Centuries. 2nd rev. ed. Hilversum: The Paper Publications Society, 1969.

An introductory essay accompanies illustrations of 4078 watermarks, many found in books. Occasionally illustrations are noted to be free-hand "eye-copies," though probably others are as well. Voorn cautions that the dates of watermarks Heawood found in book end-papers may be misleading.

- 10 Dard Hunter. Papermaking, The History and Technique of an Ancient Craft. New York: Knopf, 1943; reprinted New York: Dover, 1970.

Dard Hunter's most widely available book has detailed information on Oriental and Occidental papermaking history and techniques. A valuable illustrated reference, it includes chapters on the paper mold and watermarks.

- 11 Jean Irigoien. "La datation des papiers italiens des XIIIe et XIVe siècles." Papiergeschichte XVIII (1968), pp. 49-52.

The author attempts correlating the dates of unwatermarked papers from the earliest era of European papermaking with chain line intervals and laid line frequencies. He points out that current paper research sees the basis of paper history to lie not in dating the watermark per se, but instead dating a sheet of paper produced by a specific mold.

- 12 Max Lehrs. Geschichte und kritischer Katalog des deutschen, niederländischen, und französischen Kupferstichs in XV. Jahrhundert. 9 vol. Vienna: Gesellschaft für Vervielfältigende Kunst, 1908-1934.

This scholarly catalogue illustrates tracings of watermarks found on French, Dutch, and German engravings of the fifteenth century, including 70 watermarks found on Schongauer prints.

- 13 Irving P. Leif. An International Sourcebook of Paper History. Hamden, Connecticut: Archon Books, 1978.

An attempt at a comprehensive international bibliography on the history of handmade paper, this book lists almost 2,200 articles under five broad categories from both English and non-English books and journals. Subject and author indices aid in finding articles published in a variety of scholarly and trade journals. This publication is a useful source, though by no means an exhaustive one.

- 14 Joseph Meder. Dürer Katalog. Vienna: Gilhofer & Ranschburg, 1932; reprinted New York: Da Capo Press, 1971.

This scholarly catalogue illustrates 356 watermarks found on Dürer prints and gives a descriptive catalogue of the marks, dating their use and successfully correlating them to the numerous editions of Dürer's prints.

- 15 The Nostitz Papers. Notes on Watermarks Found in the German Imperial Archives of the 17th & 18th Centuries, and Essays Showing the Evolution of a Number of Watermarks. Hilversum: The Paper Publications Society, 1956.

This watermark reference book includes an annotated bibliography of publications on watermarks and historical profiles of many common watermarks, with 765 illustrations, mostly of Central European watermarks.

- 16 Alfred Schulte. "Papiermühlen- und Wasserzeichenforschung." Gutenberg Jahrbuch 1934, pp. 9-27.

This thought-provoking article compares what the study of watermarks has attained relative to the vast number of European watermarks before 1800 (calculated by Schulte to number a million). Schulte estimates the useful life of a pair of molds at 1000 reams, though fine paper molds may only yield 400 reams. The author also illustrates and discusses the watermarks produced by double molds which made two sheets per mold.

- 17 Allan Stevenson. "Paper as Bibliographical Evidence." The Library 5th series XVII (1962), pp. 197-212.

Stevenson observes that watermarks Briquet found in manuscripts may have misleading dates because scribes could use a supply of large or expensive paper over a period of years, while a book printer would buy paper for printing a book and rapidly exhaust that supply. He illustrates his method of examining a run of a single paper type in the Missale Speciale and notes that individual watermarks go through a series of "states" through wear, distortion, and breaking. He recognizes the identity of an individual watermark in the pattern of sewing dots where wire attaches it to the mold surface.

- 18 Allen Stevenson. "Watermarks are Twins." Studies in Bibliography IV (1951-1952), pp. 57-91.

Stevenson explains the variety of different watermarks that may occur in a single early book as the result of patterns of paper trade. He discusses and illustrates subtly varying watermark "twins" produced by the pairs of molds used by a vatman, noting that Churchill and Heawood have given little attention to watermark twins. The article has a wealth of informative footnotes.

- 19 Hendrik Voorn. De Papiermolens in de Provincie Noord-Holland. Harlem: De Papierwereld, 1960.

A Dutch text precedes 195 illustrations of watermarks from 1600 to the early 1800's in Dutch archives. The watermark entries are in English as well as Dutch. An English appendix "The Paper Mills in the Provincie of North-Holland" includes an excellent section entitled "Filigranology as an auxiliary science in the aid of history." Voorn's methods of studying papers in archives makes his watermark dates more certain, but means watermarks on paper commonly used for fine art are not always represented.