

Thomas Eakins *The Rowing Pictures*



Thomas Eakins Under the Microscope: A Technical Study of the Rowing Paintings

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The gathering together of all of the rowing paintings, related drawings, watercolors, and oil studies gives us a unique opportunity for an in-depth comparative study of Eakins' oil paintings and invites inquiry into the processes he used to create them. *The Biglin Brothers Turning the Stake* (fig. 26), the largest and most ambitious painting in the series, served as the starting point for this study. Through analysis by microscope and x-radiography, we are now able to identify many of the individual steps, not always visible to the naked eye, that Eakins employed to convey a powerful sense of observed reality. What these steps reveal is an artist preoccupied with perspective and measurement.

Eakins absorbed the idea of extensive preparation from his teacher Jean-Léon Gérôme, with whom he studied in Paris from 1866 to 1869.¹ Gerome used drawings, oil studies, and photography to gather information for his compositions, sometimes employing draftsmen for perspective and architectural details. His influence can be seen in Eakins' analytical approach to the rowing paintings.

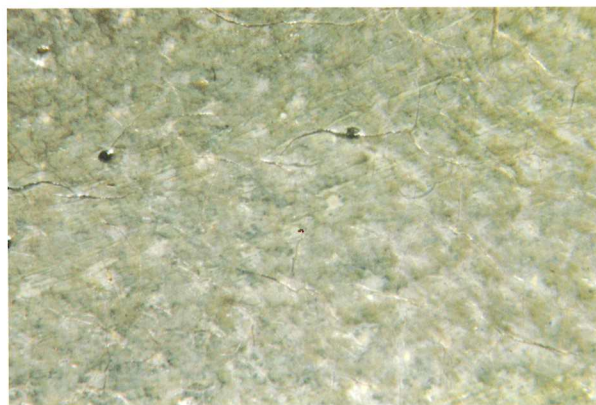
Although no complete sequence of preparatory work for any single rowing painting survives, from the considerable extant material we can reasonably speculate on the procedures Eakins followed.² He began with rough on-the-spot pencil drawings, such as the small architectural sketch of the Girard Avenue Bridge (fig. 14) for *The Champion Single Sculls* (fig. 4). At the same time, he made oil sketches, establishing composition and color relationships, such as *Sketch of Max Schmitt in a Single Scull* (fig. 42) and *The Oarsmen* (fig. 28). The former is not a study for *The Champion Single Sculls*, but may relate to the second figure, position of the boat, and background for *Oarsmen on the Schuylkill* (fig. 40). *The Oarsmen* can be related in its figural composition to *The Biglin Brothers Turning the Stake* and *The Biglin Brothers Racing* (figs. 26, 22).

Next, Eakins most likely created mechanical drawings of the central elements of the composition, in particular the scull, based on measurements of the actual boat.³ For example, *Perspective Drawing for The Biglin Brothers Racing* (fig. 25) shows a perspective rendering of

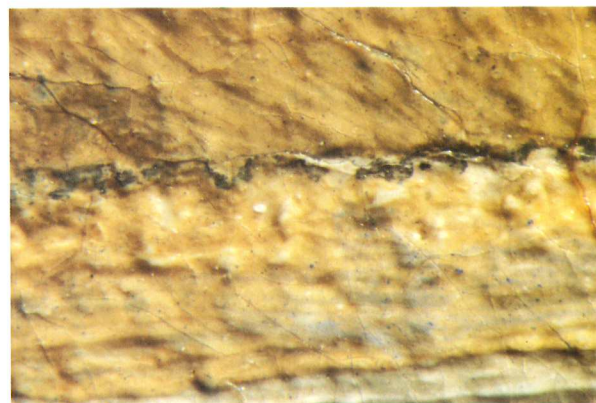
48
Photomicrograph of *The Biglin Brothers Turning the Stake* (fig. 26), showing incised lines.



49
Photomicrograph of *The Biglin Brothers Turning the Stake* (fig. 26), showing prick marks outlining former planned position for John Biglin's right arm.



50
Photomicrograph of *The Biglin Brothers Turning the Stake* (fig. 26), showing drawing lines in scull.



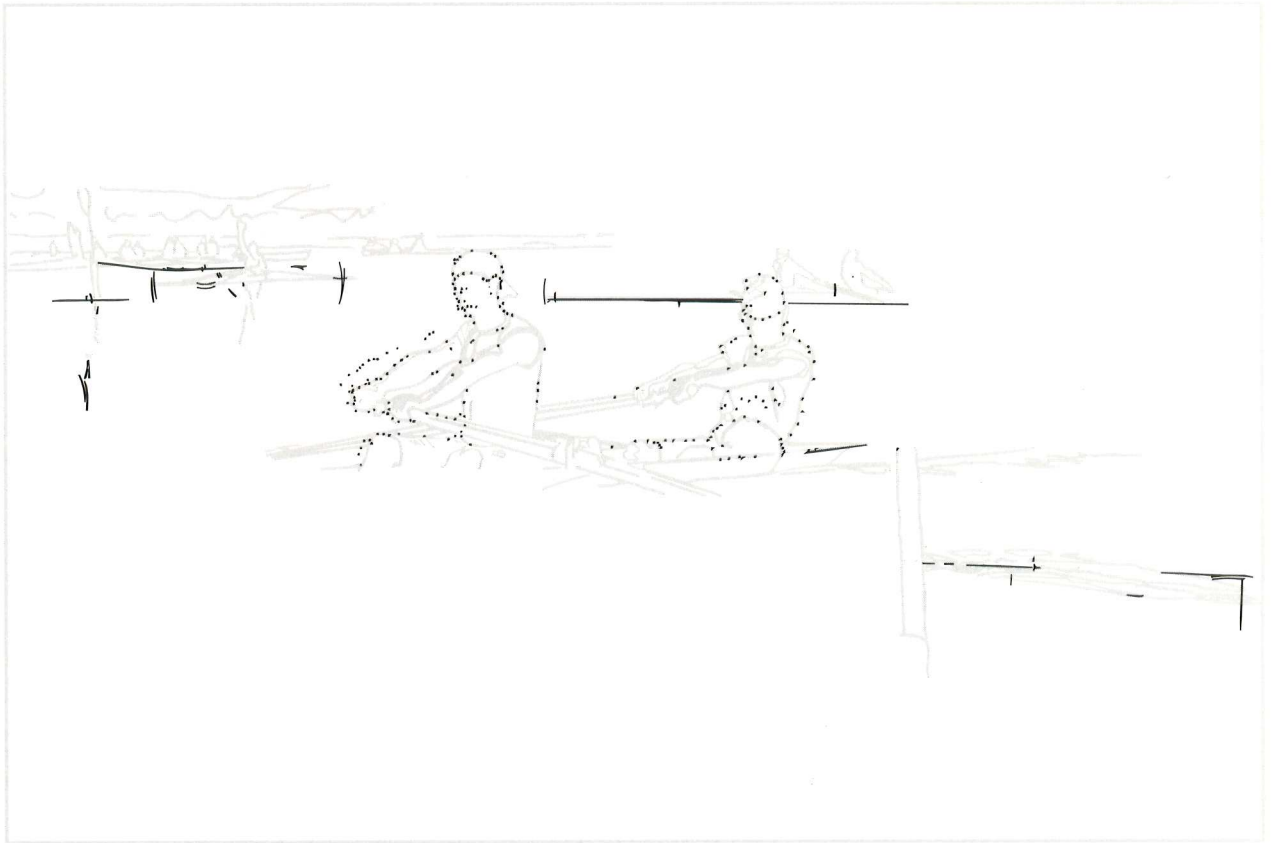
the skull, a side view, the skull's position in the water, and written notations throughout the sheet concerning measurements and shadows. In other sheets drawn to the scale of the paintings, such as the *Perspective Drawing for The Biglin Brothers Turning the Stake*, Eakins focused only on the skull, establishing its placement and rendering precise details of its construction. In other perspective drawings, he brought together rowers and boat (figs. 21, 31).⁴

In a lecture on vanishing points, Eakins explained that using colored inks was the least complicated way to approach complex drawings.⁵ In the rowing drawings, he employed blue ink for lines purely concerned with perspective, such as the marks for square footage in the ground and for the horizon line and central vertical line and red ink to enclose complicated projections such as the end of an oar (fig. 21). Finally, he outlined the main forms in pencil, later strengthening them with black ink.

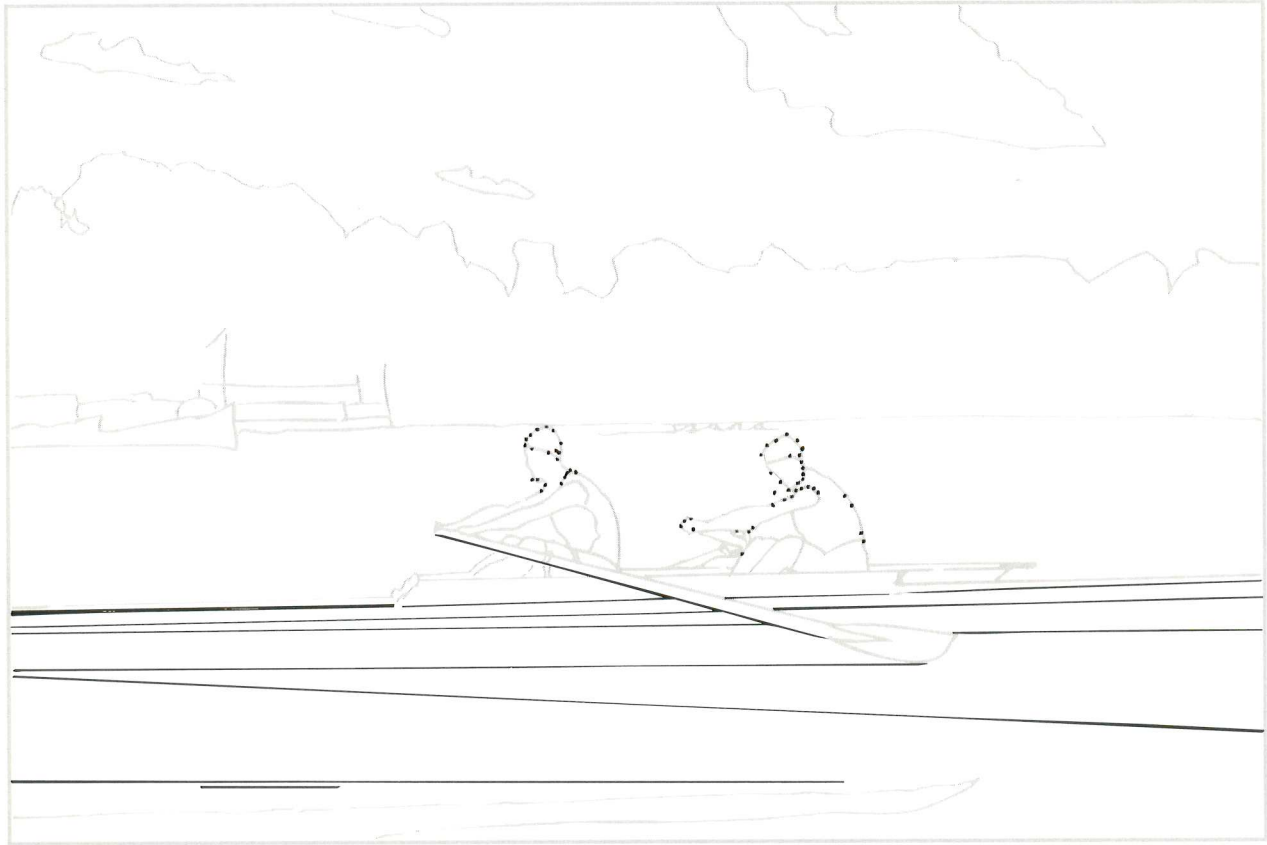
Eakins then transferred his carefully worked out drawings to canvas, an exercise in precision and planning. The canvases he used were finely textured, plainly woven, and commercially primed with a white ground layer.⁶ All the rowing paintings examined reveal that Eakins made a series of unusually exact markings either on or scratched into this ground layer. These markings served as guidelines for the positions and contours of boats, oars, waves, and principal figures. Through examination by microscope, x-radiography, and infrared reflectography, we can detect three distinct types of markings: incised lines (fig. 48), prick marks (fig. 49), and drawing lines (fig. 50). Many lines are partially filled with the subsequent paint, which proves that Eakins cut into the dry ground layer before beginning to paint; more markings probably remain hidden beneath thicker paint. Most of the incised lines appear to have been ruled with a sharp metal stylus, possibly through a sheet of transfer paper.⁷ They function as horizontal and diagonal grids for important elements in the design as well as for contours and outlines. Eakins also incised short arcs, probably with a compass, to mark off important points.

The Biglin Brothers Turning the Stake (fig. 26) contains the greatest number of preliminary markings, in the form of lines incised into the ground layer prior to painting. The locations of these lines were observed with a microscope and x-radiographs and then plotted on a full-scale tracing of the painting (fig. 51). Eakins' incised lines and compass arcs precisely position all four boats; waves, splashes, and reflections are given similar treatment. A set of lines locates the oar as it hits the water in the lower right corner, and closely grouped, curved vertical lines indicate the reflection of the red-flagged stake at the far left.

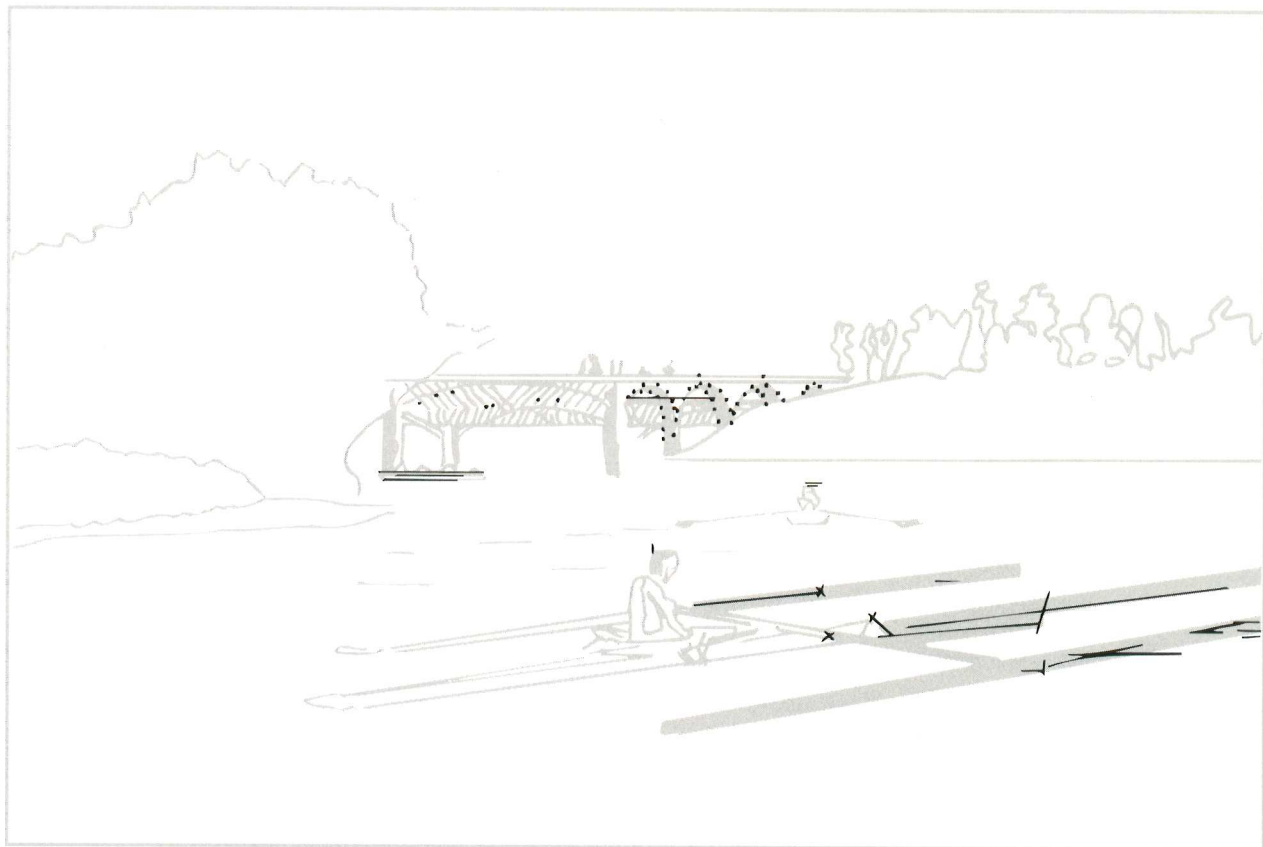
A relatively simple series of incised lines was observed with a microscope in *The Biglin Brothers Racing* and again charted on a diagram (figs. 22, 52). Diagonal and horizontal guidelines stretching to the edges of the painting accurately situate the principal boat, the stern of the opposition's boat and the blade of the central oar. Similarly, in *The Champion Single Sculls* (figs. 4, 53) diagonal, incised lines locate Max Schmitt's boat and the wake left by the oars, whereas ripples are indicated with horizontal lines crossed with arcs at relevant points.



51
Diagram plotting locations of preliminary markings
on *The Biglin Brothers Turning the Stake* (fig. 26).



52
Diagram plotting locations of preliminary
markings on *The Biglin Brothers Racing* (fig. 22).



53
Diagram plotting locations of preliminary
markings on *The Champion Single Sculls* (fig. 4).

Horizontal lines position the small boat in the upper left background, the rower's head in the boat at right, and the bridges. In *The Schreiber Brothers* (fig. 35), a broken, incised line runs horizontally along the river bank, and individual incised lines mark the thin wires from the cockpit to the end of the scull.

Visible only under the microscope or in a magnified x-radiograph are tiny prick marks which follow the outlines and contours of the heads, torsos, and clothing of the oarsmen in at least three rowing paintings: *The Biglin Brothers Turning the Stake* (fig. 51), *The Pair-Oared Shell*, and *The Biglin Brothers Racing* (fig. 52).⁸ Eakins also used prick marks to delineate the rounded elements of the bridges in *The Champion Single Sculls* (fig. 53).⁹ He probably pricked through a preliminary drawing or intermediary tracing onto the canvas, joined these marks in pencil, and reinforced the outlines with a drafting pen or fine brush. The prick marks in *The Biglin Brothers Turning the Stake* (fig. 49) reveal Eakins' decision to change the composition: approximately ½ inch above John Biglin's left arm lies a second line of prick marks, indicating an earlier placement of the arm.¹⁰

Along with the incised lines and prick marks, Eakins used drawing, probably in graphite, to mark boats, architectural features, and dominant reflections, as well as to provide general compositional guidelines. Partially visible through thin or light paint under the microscope, these markings are based on the perspective drawings. For example, in *The Biglin Brothers Turning the Stake*, there is a vertical line from the fingers of Barney Biglin's right arm to the bottom edge of the canvas, providing the central axis for the arrangement of waves in perspective,¹¹ and a ruled diagonal line from the right edge to approximately the center of the right side of the boat, which locates the uppermost tip of the scull. These precise notations appear in Eakins' perspective study of the subject (fig. 30).

One additional type of marking has been identified: large, conical pinpricks made at approximately 1-inch intervals along all four edges of *The Biglin Brothers Turning the Stake*. Easily discernable without magnification, these markings do not appear on any of the other rowing paintings and seem unrelated to the preparatory drawings. Most likely, they were caused by the adherence of transfer paper when Eakins created a now lost, full-scale watercolor of the painting or when his pupil Alice Barber made an engraving of it for *Scribner's Monthly* in June 1880. Thus these pinholes record a later process, unrelated to Eakins' preparatory stage.

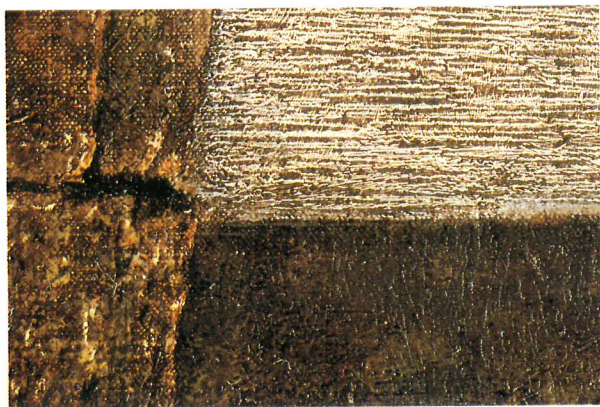
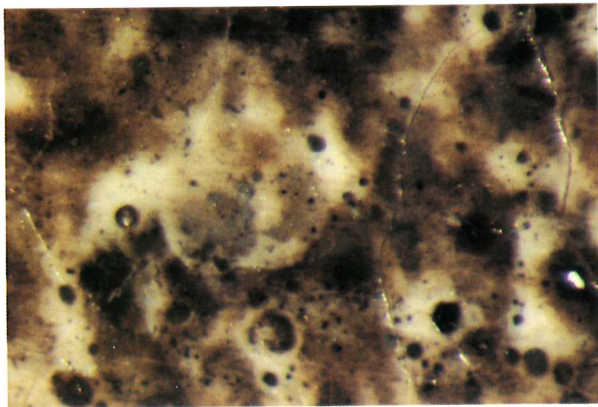
When the transfer of his preparatory drawings to canvas was complete, Eakins began the painting process. In *The Champion Single Sculls* and *The Biglin Brothers Turning the Stake*, he first subtly modified the white ground color with a translucent toning layer, brown-black in the latter (fig. 54) and pale blue in the former painting.¹² At a microscopic level, the commercially primed ground layers on both these paintings are pitted with tiny rounded craters that are probably burst air bubbles. They impart a slightly textured surface or "tooth" not visible when examining Eakins' other rowing canvases or paintings from the early 1870s.¹³ When

Turning the Stake is examined closely, the brown-black modifying layer can be seen on the unpainted edges, wherever the paint is thin and, under magnification, in the tiny burst air bubbles of the ground surface. In paint cross-sections of the sky, the toning appears as a thin, dark, transparent, particle-free layer. Probably with the aid of a template,¹⁴ Eakins avoided brushing dark toning on the area reserved for the boat, giving it a luminous quality in comparison to its surroundings.

The boats and oarsmen in the rowing scenes are thinly painted, with the paint layers following the incised lines exactly, imparting a sense of precision and conviction. But Eakins set these skulls and figures against painterly and less controlled areas, employing techniques ranging from the vigorous use of the palette knife for skies to the delicate application of opaque paint and glazes for the skulls. For example, he achieves an intense, jewel-like effect in *The Schreiber Brothers* (fig. 35): a bright red glaze and pink opaque paint on the oarsmen's caps and a deep red glaze on the shadowed sides of the orange struts are optimized by the cool, dark tones of the pier behind. Of all the rowing paintings, *The Biglin Brothers Turning the Stake* displays the most varied combination of techniques, with x-radiographs revealing Eakins' variations in paint thickness and approach. The thick, flat opaque landscape and spontaneous, multilayered sky contrasts dramatically with the thin water zone containing carefully executed boats and figures.

Eakins conveyed the liquid quality and reflective properties of water by using techniques borrowed from both traditional oil painting and watercolor. In *The Pair-Oared Shell*, he created highlights in the upper central water area by scratching through dry, gray paint with a sharp instrument to expose a white underlayer (fig. 56). Conversely, in *The Champion Single Sculls* and *The Biglin Brothers Turning the Stake*, Eakins employed the watercolor device of reserving portions of the light ground to serve as highlights in the foreground waves.¹⁵ In the upper left and right of the latter painting, he thinned the paint while it was still wet, most likely through rubbing the surface with a turpentine-soaked cloth or brush, achieving a washlike paint layer appropriate for depicting water (fig. 59). He executed the bright reflective surface of the water near the river bank with thin, fluid, vertical brushstrokes, while the lower half of the river is created with thicker, horizontal strokes to suggest movement and surface ripples. To break up the brown reflection of the red-capped rower, he applied a blunt point, probably the end of a brush, to lift strokes of wet paint from the surface of the canvas (fig. 58). He also glazed much of the upper water with a subtle, greenish-yellow color. Muddy, opaque brushstrokes tone down some of the brighter blues in the water, mirroring a similar dulling down of the bright blue paint in the sky.

In contrast to the masterly effects Eakins achieved in the water areas and skies, the river bank in this painting appears dense and lacks luminosity. Indeed, he admitted to Gérôme in 1874 that he was experiencing problems keeping his tones from sliding together into muddiness at

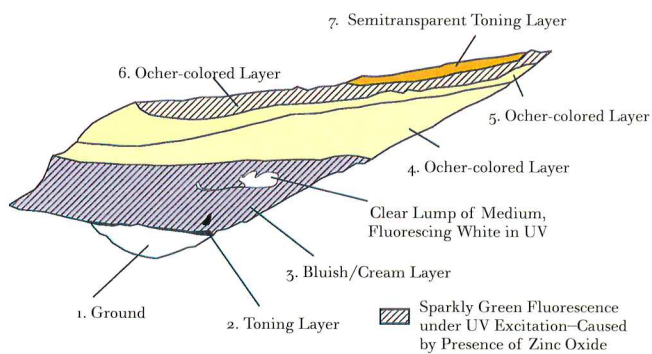
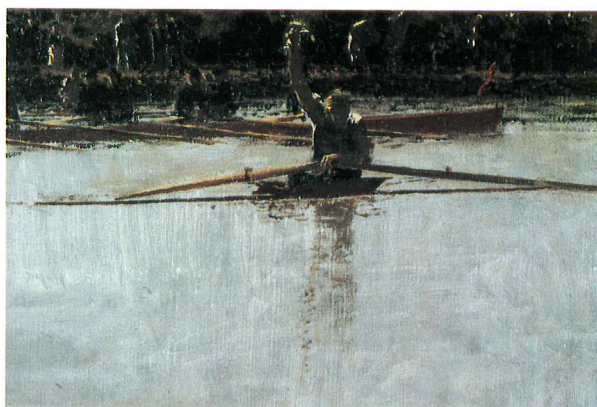


54
Photomicrograph of *The Biglin Brothers Turning the Stake* (fig. 26), showing toning layer.

56
Detail of right center in *The Pair-Oared Shell* (fig. 19), showing scratching with a sharp instrument to expose white underlayer.

55
Detail of the horizon line in *The Pair-Oared Shell* (fig. 19), showing wet-in-wet strokes.

57
Photomicrograph of the sky, near the horizon, in *The Biglin Brothers Turning the Stake* (fig. 26), showing granular ocher layer.



58

Detail of reflection in *The Biglin Brothers Turning the Stake* (fig. 26), showing the use of a blunt point to lift strokes of wet paint from the surface.

59

Detail of *The Biglin Brothers Turning the Stake* (fig. 26), showing washlike paint layer.

60

Cross-section of sky from *The Biglin Brothers Turning the Stake* (fig. 26).

61

Diagram of cross-section of sky from *The Biglin Brothers Turning the Stake* (fig. 26). Numbers indicate progression from ground layer to top.

the dark end of the value scale or into weakness around the lights.¹⁶ A cross-section taken from the central area of greenish vegetation in *The Biglin Brothers Turning the Stake* reveals no less than three revisions, a record of Eakins' admitted struggle with tonality and color.

Skies in the rowing paintings are often agitated and thickly painted, providing passages of movement that complement the relative calm of the river. Eakins frequently softened the horizon line between trees and sky with a few wet-in-wet strokes, as in *The Pair-Oared Shell* (fig. 55). He used a palette knife for the upper layers of sky in *The Biglin Brothers Turning the Stake*, *The Schreiber Brothers*, and the oil study for *John Biglin in a Single Scull* (fig. 34). This technique probably derives from his brief period of study with the French painter Léon Bonnat, whose bold paint application provided an alternative to Gérôme's subordination of surface texture. Eakins also was impressed by Velázquez's expressive approach, for he recorded in his "Spanish notebook" that, like the seventeenth-century master, he found it best to use a palette knife when drawing with color.¹⁷

Although some of the most exciting brushwork appears in the skies of the rowing paintings, Eakins maintained the focal point of the composition on the subject. He may even have regarded a bright blue sky as a distraction, for most of the rowing paintings have reworked and toned-down skies.¹⁸ A cross-section taken from the sky in *The Biglin Brothers Turning the Stake* reveals a layered structure: first Eakins painted the sky light blue, then he toned it down with a creamy ocher applied thickly with a palette knife (figs. 60, 61). Similarly, in the oil study for *John Biglin in a Single Scull*, the sky is composed of three distinct layers of blue paint from bottom to top: an intense medium blue, a light blue, and a muddy color applied with a palette knife. In the skies depicted in four paintings, *The Biglin Brothers Turning the Stake* (fig. 57), *The Pair-Oared Shell*, *The Schreiber Brothers*, and *The Biglin Brothers Racing*, Eakins smeared a thin, abraded, granular, ocher-colored layer unevenly over much of the paint surface to reduce the brightness and warm the tonality.¹⁹

We can gain insight into Eakins' choice of painting materials through pigment and medium analyses. *The Biglin Brothers Turning the Stake* was chosen as a representative rowing painting for limited sampling and non-destructive analysis. The commercially applied white ground layer consists of mostly lead white, with small proportions of iron in the upper regions.²⁰ Bone black provides the basic component of the brown toning layer.²¹ In the body of the painting, cobalt blue was found in the Biglins' head covers and in the blue flag;²² the pigment vermilion, in the opposing team's head covers and flag.²³ In various parts of the river bank, viridian, an intense transparent green, and cadmium yellow were found.²⁴ Lead white and zinc white dominate in the sky, with lead-rich layers alternating between zinc/lead-rich bands.²⁵ Eakins may have purchased a mixture of lead and zinc white, a mixture available on the market in a single paint.²⁶ Alternatively, he may have carefully layered the two whites in deference to their distinct advantages and disadvantages: zinc white possesses high opacity but becomes brittle on

drying; lead white has advantageous drying properties but low tinting strength. Eakins also may have shared the fear, expressed by late nineteenth-century writers on art, of the possible chemical changes caused by hydrogen sulfide on lead white. Various solutions were proposed, and he may have acted on one that advised artists either to mix or layer lead white with zinc white.²⁷ Medium analysis was conducted on two minute samples of the sky from *Turning the Stake*. In the upper, creamy ocher layer, the presence of an aged oil, possibly linseed, is suggested, which would be normal for the period. Somewhat more unusual, a natural resin was detected in the lower light blue layer.²⁸

The evidence presented here reveals that Eakins, at the beginning of his development as a painter, was already a superb draftsman and master of technical problems. One of the most striking aspects of his process is the novel method of transferring a design from a drawing to the canvas using a combination of incised lines, pinpricks, and drawing lines. Equally noteworthy is his continual search for a balance of tone, color, and texture. Although reworking in the landscapes and skies betrays Eakins' relative inexperience as a painter, he found remarkably innovative solutions for the depiction of water. And he delicately layered paint for the sculls and their crews, enhancing the exquisite detail of his compositions. He relished the technical challenges involved in portraying objects as intricately constructed and finely proportioned as rowing boats. Through his detailed perspective drawings, drawn to the scale of the finished paintings, through compositional studies, watercolors, and oils, Eakins endeavored to create a series of rowing paintings equal in craftsmanship and technical achievement to the boats and the sport he loved.

3 A surviving box of drafting tools originally belonging to Eakins and probably dating back to his school days contains instruments necessary for these types of drawings: dividers, compasses, ruling pens, and a lettering pen; see Rosenzweig 1977, p. 223.

4 For a full discussion of the perspective drawings, see Amy Werbel's essay (pp. 79–89).

The only two extant drawings for *The Biglin Brothers Turning the Stake* were formerly owned by Charles Bregler (figs. 29, 30). His correspondence with Henry Sayles Francis, formerly curator of paintings at The Cleveland Museum of Art, offers tantalizing clues regarding other drawings, now lost, for the painting. In a letter dated March 22, 1942, Bregler wrote: "Eakins made accurate drawings of the ground plan of the boat, etc. But it was impossible to save them, the paper being in a state of decay. These are the only two drawings that remain that he made for this painting." In a letter to Francis dated March 30, 1943, Bregler described the boat drawings on drafting paper he had discovered twenty-five years earlier, including the large perspective drawing for this painting: "They were rolled up and were in an old trunk. When I tried to unroll them, they crumbled to pieces—and was only successful in saving a few. To me they are rare documents as they so fully give a very graphic picture of Eakins' methods, and the minute study of every detail—made from measurements of the boat." Both letters are in The Cleveland Museum of Art, Registrar files.

5 "[T]o avoid complications, it is as well in all extended drawings to use three different inks, a blue ink for instance for the square feet marks in the ground plan and from the picture of these square feet in the perspective plan, for the horizon, and middle one; in short for all the purely perspective scale parts; secondly a red ink for axes of construction, or simpler figures enclosing the complex ones not sought directly; and finally black ink for the finished outlines"; Thomas Eakins, "Vanishing Points," unpublished lecture, c. 1884, PMA.

6 Many of his canvases came from Janetzky and Company, one of the best art materials suppliers in Philadelphia. The company's label appears on the backs of *Oarsmen on the Schuylkill*, *The Biglin Brothers Turning the Stake*, and *The Champion Single Sculls*.

7 Goodrich 1933, p. 42, relates that a detailed perspective drawing would be drawn to the same scale as the canvas and transferred to canvas with transfer paper. Incised markings can also be seen in *Sailboats Racing*, 1874 (Philadelphia Museum of Art) and *Starting Out Aftier Rail*, 1874 (Museum of Fine Arts, Boston).

8 The dark brown "toning" layer and accumulated layers of dirt and varnish probably account for the dark appearance of the prick marks through the microscope.

9 The tiny dots around the bridges appeared black when observed under the microscope. It is assumed that they are prick marks, as in *The Biglin Brothers Turning the Stake*, but no complete x-radiograph exists for verification.

10 Alternatively, this line of prick marks may indicate an error made during Eakins' transfer process.

11 A vertical center line is frequently observed in Eakins' work, not only in oil paintings, but also in drawings and watercolors. It can be seen with the naked eye in *The Meadows, Gloucester*, c. 1882 (Philadelphia Museum of Art) in the green area of the foreground, and in *Sailing*, c. 1875 (Philadelphia Museum of Art) in the foreground, middle ground, and just above the horizon for approximately 1 inch.

12 It was not determined if Eakins used a toning layer on the grounds of the other rowing paintings; however, colored toning layers are common in his work. They have been detected on many of his paintings at the Philadelphia Museum of Art; Theodor Siegl, various drafts of his 1978 catalogue, kindly lent by Evan Turner, former director, The Cleveland Museum of Art. Many oil sketches on canvas and primed paper from the Bregler Collection at the Pennsylvania Academy of the Fine Arts also have brown toning layers; see Mark F. Bockrath, Virginia N. Naude, and Debbie Hess Norris, "Thomas Eakins, Painter, Sculptor, Photographer," *Journal of the American Institute for Conservation* 31 (1992), pp. 51–64.

13 This "tooth" was not visible on Eakins' other sculling canvases or on other paintings from the early 1870s examined with the microscope: *The Pair-Oared Shell*, *The Biglin Brothers Racing*, *The Schreiber Brothers*, *Starting Out Aftier Rail*, and *Sailboats Racing*. *Oarsmen on the Schuylkill* was not examined by the author.

14 I am grateful to Bruce Robertson for suggesting this possibility.

15 I noted Eakins' technique of reserving prearranged spaces for separate parts of the design when examining his watercolor *John Biglin in a Single Scull* (fig. 33).

16 Foster and Leibold 1989, p. 62.

17 Homer 1992, pp. 48–49.

18 For other examples in Eakins' painting of reworking a blue sky with a palette knife to tone it down, see Siegl 1978, pp. 89–90, 93.

19 Whether this represents Eakins' uppermost layer or the remains of early restoration remains an unresolved question.

- 20 Sky cross-section analyzed by x-ray dot mapping and EDX analysis. Analysis carried out by James Smith at NASA Lewis Research Center. Analysis performed on a JEOL 840-A electron microscope. The experimental conditions were presented in a paper by Christina Currie and James Smith, "The Biglin Brothers Turning the Stake-Boat by Thomas Eakins: A Technical Study Reveals Surprising Techniques," at the 1994 meeting of the American Institute for Conservation of Historic and Artistic Works, Nashville.
- 21 Calcium, phosphorus, and oxygen found by x-ray dot mapping and EDX analysis suggest the presence of bone black.
- 22 Cobalt detected by x-ray fluorescence spectroscopy conducted by Bruce Christman, head of conservation at The Cleveland Museum of Art. A Kevex 0975 A Energy Dispersive X-Ray Fluorescence Spectrometer was used. Most analyses were conducted using 50KV, 3.3 Ma excitation conditions with a mixed barium carbonate and strontium carbonate secondary target. Occasionally a single target of either barium or strontium carbonate was used. In most cases an approximately 4 mm area of the painting was examined using a 6 mm collimator on the x-ray tube and a 2 mm collimator on the detector.
- 23 Mercury, characteristic of vermilion, was detected by x-ray fluorescence spectroscopy.
- 24 Chromium detected by x-ray fluorescence spectroscopy, presence of viridian confirmed by polarizing microscopy. Cadmium detected by x-ray fluorescence spectroscopy.
- 25 X-ray dot mapping and EDX analysis were used.
- 26 For example, Windsor and Newton's "New White," which was listed in the company's catalogue for 1849. I am grateful to Leslie Carlyle for sending me this information from her unpublished Ph.D. dissertation, "A Critical Analysis of Artists' Handbooks, Manuals and Treatises on Oil Painting Published in Britain Between 1800-1900: With Reference to Selected Eighteenth Century Sources" (London: Courtauld Institute of Art, University of London, 1991).
- 27 Ibid.
- 28 The presence of a natural resin is further suggested by examination of the sky cross-section under ultraviolet excitation: transparent areas of medium within the light blue layer fluoresce white, a known characteristic of natural resins. This discovery confirms the experience of conservators cleaning Eakins' work, who have observed that his paint can be highly sensitive to their usual solvents for removing discolored varnish and have blamed the problem on his "resinous" paint mixtures. Hilaire Hiler, *Notes on the Technique of Painting* (New York: Oxford University

Press, 1934), p. 166, notes, "Girardot said that this medium gave paintings 'the solidity of flint.' The Duroziez oil is prepared by the firm of Duroziez of Paris, and is now known by the trade name of Oliesse." It is possible that Eakins was attempting to reconstitute an oil resin similar to that used by Gérôme, whose painting medium is said to have been composed of four parts oil copal varnish mixed with Duroziez oil and three parts rectified oil of spike or turpentine.

Berger (pp. 102-23)

This essay develops ideas first discussed in a chapter of my dissertation, "Determining Manhood: Constructions of Sexuality in the Art of Thomas Eakins," Ph.D. diss. (New Haven: Yale University, 1995). An earlier version appears in Berger 1994.

- 1 "The Society of American Artists Second Annual Exhibition," *New York Daily Tribune*, March 22, 1879.
- 2 Sadakichi Hartmann, *A History of American Art* (Boston: L.C. Page & Company, 1901), I, pp. 192, 200-03.
- 3 Carroll Smith-Rosenberg, *Disorderly Conduct: Visions of Gender in Victorian America* (New York: Alfred A. Knopf, 1985), p. 90.
- 4 Joseph F. Kett, *Rites of Passage: Adolescence in America, 1790 to the Present* (New York: Basic Books, 1977), pp. 31, 144, lists some of the cultural markers indicating the attainment of manhood: marriage, leaving home for good, joining a church, or entering a profession. For views of veterans as masculine, see E. Anthony Rotundo, "Body and Soul: Changing Ideals of American Middle-Class Manhood, 1770-1920," *Journal of Social History* 16 (Summer 1983), p. 28; George M. Fredrickson, *The Inner Civil War: Northern Intellectuals and the Crisis of the Union* (New York: Harper & Row, 1968), pp. 175-76. For the Civil War service of Eakins' high school classmates, see Frank H. Taylor, *Philadelphia in the Civil War, 1861-1865* (Philadelphia: The City of Philadelphia, 1913), p. 300; Nicholas H. Maguire, "Contribution of the Central High School of Philadelphia to the War," pamphlet, 1864. For the importance of work, see E. Anthony Rotundo, *American Manhood: Transformations in Masculinity from the Revolution to the Modern Era* (New York: Basic Books, 1993), pp. 167-69, 178-93; Robert L. Griswold, *Fatherhood in America: A History* (New York: Basic Books, 1993), pp. 13-14.
- 5 Rotundo, *American Manhood*, pp. 191, 178.

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Manuscript Collections

- AAA
 Archives of American Art, Smithsonian Institution, Washington, D.C.
- FHL
 Friends Historical Library of Swarthmore College;
 Richard Tapper Cadbury Collection
- PAFA
 Pennsylvania Academy of the Fine Arts,
 Philadelphia; Charles Bregler's Thomas Eakins
 Collection
- PMA
 Philadelphia Museum of Art; Thomas Eakins
 Archives, Department of American Art