The Technique of Morris Louis

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HISTORICAL BACKGROUND: ACRYLIC PAINTS

The widespread use of acrylic paints by contemporary artists tends to obscure the fact that it was not until several decades after their development that this synthetic medium gained currency. For one thing, their initial availability was limited. Of more consequence, however, was the resistance of artists to adapting their techniques to the new medium, whose designation "synthetic" or "plastic" seemed anathema to their conceptions of fine art.¹

The development of acrylic resin paints dates to the beginning of the century, when German and Mexican scientists working independently discovered the first synthetic plastics. Combining carbolic acid with formaldehyde yielded a soft, gummy substance that could be molded and set by heat. The first patent for commercial production was obtained in 1915 by Dr. Otto Rohm of Darmstadt, Germany; production began in the United States in the 1930s.

The Mexican mural painters David Siqueiros and José Gutierrez obtained the cooperation of the Union Carbide laboratories in 1934 to develop a medium suitable for outdoor mural paintings. Siqueiros had published a manifesto in 1930 expressing his conviction that art must exist outside the museum setting and become part of the environment so as to reach the widest public possible. This idea was the motivation for his mural projects in Mexico and the United States, as well as for the experimental workshop he organized in New York in 1936. Jackson Pollock was the workshop's most famous American participant, but Morris Louis also worked there. Its products included murals and floats and banners for Communist demonstrations. Equally important were the experiments with spray guns, airbrushes, and synthetic paints, including Duco. As Francis O'Connor reports, "The spontaneous application of paint and the problems of 'controlled accidents' occupied the members of the workshop."

By the early 1940s, two American paint manufacturers, Leonard Bocour and Harry Levison, were working independently to perfect an acrylic paint suited to artists' needs. In November 1941 an artist friend brought Bocour a "jar of liquid that looked very much like honey, thick and viscous." Bocour mixed white pigment into this acrylic resin and produced a paint that adhered well to both illustration board and paper, dried quickly, and left no halo like that formed when turpentine or mineral spirits were used to dilute pigment. Further experiments

yielded the stabilizer best suited to hold pigment and resin in suspension. In 1946 Bocour's acrylic resin paint, Magna, first appeared on the market.

Bocour began giving artists tubes of the new paint to test its potential. Among the first experimenters were Barnett Newman, Ad Reinhardt, Jackson Pollock, and, beginning in 1947, Morris Louis. Bocour's first formula for Magna produced a thin, soupy paint. He later added another acrylic resin to produce a thicker consistency, more closely resembling that of the oil paint that artists were accustomed to using. Louis's letters to Bocour in 1958 complain of difficulties in thinning the "recent beeswax stuff." His complaints continued until April 1960, when Bocour produced a special Magna formula for Louis and Kenneth Noland. He obtained a consistency like that of maple syrup by eliminating the suspending agent. This paint was far more amenable to thinning, making it readily adaptable to the techniques then used by the two painters.

American painting of the 1960s, the first decade in which acrylic paints became the favored medium of artists, if often termed "color painting" because of the greatly increased brilliance of the colors attainable with synthetic paints. As one writer explained, "The transparency of the resin gives . . . a quality of light reflection and refraction with the paints that provides a luminosity and a sense of depth unattainable in any other medium. The colors seem to glow from within." In fact, the acrylic resin Acryloid F-10, used as the medium for Magna, has a transparency clearer than all but the highest grade of optical glass. When used on unprimed canvas, Louis's practice in the majority of his paintings, Magna penetrates the fabric and completely covers the fibers, thus further increasing the colors' luminosity. (Figs. 4, 5, and 6, which show the backs of *Dalet Aleph* (cat. no. 137), *Yad* (cat. no. 140), and *Hot Half* (cat. no. 653), demonstrate how thoroughly the paint soaks through unprimed canvas.)

Magna was the only acrylic paint Louis ever used and, from 1954, the only medium he used. Magna contains pigment, Acryloid F-10, and small amounts of bodying and stabilizing agents. It can be thinned with turpentine, which creates a matte surface, or with additional medium, which creates a glossy surface and retards the drying time. Each layer of paint bonds chemically with the underlying layers, forming a homogeneous surface regardless of the varying thicknesses of paint layers. When applied to unprimed canvas, Magna seals and protects the fabric fibers. One difficulty with the paint is its tendency to pick up underlying layers, especially if a great deal of turpentine or medium is used to thin the pigment. Varnishes have been developed that can be applied between coats of paint to eliminate this problem.

MORRIS LOUIS (1912-1962)

LOUIS'S TECHNIQUES

Early Paintings, 1934–53

Prior to 1953, Louis worked on a small easel scale, rarely more than 36 by 30 inches, using primed linen canvas. He worked with oil paint until Magna became available to him in 1947. Initially, he simply applied Magna on the primed linen, working with it as he had previously worked with oils.

The first evidence of less traditional techniques appears in four paintings from 1948–49 (cat. nos. 18–21), in which Louis evidently "drew" by squeezing lines of paint directly from the tube onto the canvas, in a manner reminiscent of Miró. This technique prepared Louis for working with dripped lines of paint, which he began in 1950 with *The Ladder* (cat. no. 27) and developed most fully in his *Charred Journal* series of 1951 (cat. nos. 30–36). Obviously influenced by Jackson Pollock, Louis continued to explore drawing with dripped paint in 1952 (cat. nos. 37–39).

In 1953 Louis produced a group of paintings (cat. nos. 44–47) that reveal his response to Willem de Kooning and his continuing interest in Pollock. Still using primed linen, Louis expanded the size of his canvases to about 6 1/2 by 8 feet. He used Magna and also explored the effects of aluminum paint, whose surface reflections and resulting spatial ambiguities had also interested Pollock. Drips and splatters are combined with brushed areas whose vigorous activity and spatial compression relate to De Kooning's figure paintings of this period, a group of which were shown in 1953 at the Washington Workshop, where Louis taught and exhibited.

One can only speculate about which of Louis's paintings from 1953 were made after he and Noland visited Helen Frankenthaler's New York studio in April of that year. The gestural drawing and figurative overtones of *Trellis* (cat. no. 48) have much in common with her contemporary paintings, although she had given up the use of primed canvas that Louis still relied on for this painting. Even bolder in their experimental qualities are three paintings, *Dark Thrust* (cat. no. 49), *Landscape (Mid-day)* (cat. no. 50), and *Untitled (#13 Experiment)* (cat. no. 51), that more directly reflect Frankenthaler's innovative techniques.

Landscape (Mid-day), signed and dated 1953, was painted in two layers. The first was made by pouring diluted black and ocher paint from what is now the left side horizontally across the surface, creating a stained background. Then Louis vigorously brushed thick Magna over this field. The result resembles a Franz Kline painting superimposed upon a mid-1950s Frankenthaler—directly reflecting Louis's interest in two of the artists whose paintings he had seen during his trip to New York. Finally, although Louis's canvas measures just 45 by 35

inches, it was cut from a larger painted canvas and stretched only after being cropped. This practice, new for Louis, had already been adopted by Pollock and Frankenthaler. The expansive quality of Louis's composition, which appears to continue beyond the frame in all directions, was not a feature of Pollock's work, nor of Frankenthaler's until the early 1960s.

Dark Thrust is very similar to Landscape (Mid-day) in its techniques and size, but Untitled (#13 Experiment) displays only the black and other staining on a canvas slightly more than six feet high. The designation "Experiment" inscribed on the stretcher recalls Noland's explanation that he and Louis worked in the same studio together after the New York visit, attempting to break down their previous assumptions about painting. This canvas introduces the ideas Louis explored more thoroughly in the series of Veil paintings from 1954.

Veil Paintings, 1954

The nature of Louis's achievement in his series of Veil paintings from 1954 was aptly described by Clement Greenberg:

The crucial revelation he got from Pollock and Frankenthaler had to do with facture as much as anything else. The more closely color could be identified with its ground, the freer would it be from the interference of tactile associations; the way to achieve this closer identification was by adapting water-color technique to oil and using thin paint on an absorbent surface. Louis spills his paint on unsized and unprimed cotton duck canvas, leaving the pigment almost everywhere thin enough, no matter how many different veils of it are superimposed, for the eye to sense the threadedness and wovenness of the fabric underneath. But "underneath" is the wrong word. The fabric, being soaked in paint rather than merely covered by it, becomes paint in itself, color in itself, like a dyed cloth: the threadedness and wovenness are in the color. . . . The effect conveys a sense not only of color as somehow disembodied, and therefore more purely optical, but also of color as a thing that opens and expands the picture plane. . . . vii

A close look at *Salient* (cat. no. 63) reveals what Greenberg described. Louis poured many colored washes across the 6-by-8-foot canvas, predominantly in a vertical direction. Some of the earliest pours run horizontally across the field, however, and their contours remain visible as delicate arcs that cross the field. An enlarged detail (fig. 7) of an area in the center of the painting discloses the extreme subtlety of the transitions between colors beneath the covering

wash of diluted black, which appears to be a delicate layer of granular flecks. The granular quality of the surface indicates that Louis thinned his paint with large quantities of turpentine rather than Acryloid F-10. The unpainted margins around the veil image are whitened with gesso, but the extreme outer edges are raw cotton duck.

Most of the remaining Veils from 1954 are similar in their techniques to *Salient*. Notable exceptions are *Untitled A* (cat. no. 52), whose palette is restricted to diluted black, and *Untitled* (cat. no. 53), in which Louis carefully placed broad, horizontal color planes side by side and used an all-over composition far more akin to Rothko than to Pollock. Actually, with its openness, *Untitled* is a remarkable precursor of 1960s color painting, particularly of some of Frankenthaler's work of that decade.

Three of the 1954 paintings are more properly termed Florals than Veils, since the image is centered and the paint poured into the center from all sides. *Spreading* (cat. no. 65), *Terrain of Joy* (cat. no. 66), and *Untitled B* (cat. no. 67) also reflect Louis's use of some less diluted (and therefore more opaque) paint. In order to increase the layered effect, he may have waited for underlying colors to dry between pours (see fig. 8, a detail of *Terrain of Joy*). Louis kept a large fan in his studio to enable him to control to some degree the length of drying time.

Magna was ideally suited to the innovative techniques of these 1954 paintings. In fact, the unique characteristics of this paint—especially its rapid drying time (relative to oils) and ability to retain a rich coloration even when thinned and applied wet-into-wet—are partly responsible for the degree to which Louis extended effects initially perceived in Frankenthaler's early stained paintings.

"Abstract Expressionist" Paintings, 1955–57

Although Louis had discovered in 1954 a technique ideally suited to the special characteristics of Magna, he changed his working method so thoroughly during the next three years that his medium had little influence on the end result. Except for the lengthy drying time these canvases would have required had they been painted in oil, they could just as easily have been executed in that medium. This fact is not important in itself except that all of Louis's other paintings from 1954 until his death rely strongly on the unique properties of acrylic resin paint.

The change is already apparent by June 1954, when Louis shipped a group of paintings to New York. Most were from the Veil series, but one, *Untitled* (cat. no. 68), closely resembles *Dark Thrust* (cat. no. 49) of 1953 in its use of agitated areas of impasto on top of broader stained color planes. Louis probed this vigorous, gestural style, juxtaposing and superimposing many

intense hues, through 1957. Sometimes he attempted to lighten the composition by retaining broad areas of unpainted canvas (cat. no. 72), but more often he permitted the opaque colors to puddle and pool (cat. nos. 73–76). By 1957 Louis's techniques on a single canvas ran the gamut of effects from staining, to brushwork both thick and thin, to splattering and dripping, with a final cascade of aluminum paint (cat. no. 77) or color (cat. nos. 78 and 79) used in an attempt to provide compositional coherence.

Veil Paintings, 1958–59

Early in 1958 Louis returned to painting Veils, using techniques that again took full advantage of Magna. In comparison to the 1954 Veils, this second Veil series was painted on a much larger rectangle, with a significant increase in the proportion of width to height. In order to support the canvas, Louis attached it to a work stretcher that measured about 8 by 12 feet, a dimension ascertained by measuring between the staple marks still evident along the edges of many Veil paintings.

At least one work stretcher had a center vertical brace and another placed about three feet to its right. The traces of these braces show as dark vertical striations in fifty-seven Veil paintings (cat. nos. 81–137). Although it was once thought that the reason for these two vertical lines was that Louis, due to the small size of his studio, was compelled to fold the canvas during the painting process, this is not true. Many Veils equal in width to those with divisions are not divided. More important, on all fifty-seven veils with the divisions, the two vertical lines are always equidistant from one another and always located in the same position with regard to the whole image. Obviously, such regularity was not a product of folding. Finally, a photograph of an area in the center of *Dalet Mem* (cat. no. 132) taken prior to its stretching unmistakably reveals marks left by the center brace (fig. 9).

The Veils painted on this work stretcher can be called "triadic," since the marks left by the braces divide the image into three unequal sections: the widest on the left, the narrowest to its right, and a third section on the far right. Why Louis chose to position the braces at irregular intervals is a mystery. Originally, he may have intended to use a single center brace and only later found the need for another. Certainly, a canvas of this size soaked in paint would have been heavy enough to bend an inadequately braced stretcher. Perhaps the decision was aesthetic from the outset, since it produced an asymmetrical rhythmic division within the symmetrically placed monolithic image. This dialogue between symmetry and asymmetry is emphasized by the linear articulation of the edges of the paint pours. Some paint was directed diagonally toward the

bottom from various places along the braces, while other pours run vertically beginning at the top edge.

The compositional "skeleton" is especially evident in a group of triadic Veils in which Louis stopped the pours a few feet short of the bottom of the braces, permitting unpainted canvas to project into the painted field (cat. nos. 131–37). This effect emphasizes the role of drawing. It is very likely that these paintings provided the stimulus for the "split" Veils (cat. nos. 139–52), in which the veil is separated distinctly into sections.

Louis prepared the paint he used for the Veils by thinning Magna first with acrylic medium and then with large quantities of turpentine. This produced a diluted paint that poured easily. He poured it from the top edge or along the braces and directed it to the bottom of the canvas. The excess either was directed into puddles (*Beth Lamed*, cat. no. 90) or drained off along the entire bottom edge (*Moss*, cat. no. 113). He probably achieved internal variations in the tapering or swelling of color planes by manipulating the angle of the stretcher and by varying the surface tautness. A loosely draped canvas, permitted to sag between the braces, would direct the paint into a narrower channel than would a tautly stretched surface, across which the paint would spread to form a broader plane. Clear examples are provided by the views of the backs of *Dalet Aleph* (fig. 4) and *Yad* (fig. 5), which show the silhouettes of the first layer of pours that soaked through the canvas. Louis achieved a more dramatic effect in *Beth Chaf* (cat. no. 182) by pouring the paint down narrow channels nearly fifteen feet long that he had probably molded in the canvas.

The granular surface quality of the 1954 Veils stems partly from Louis's use of primed canvas. In the great majority of the 1958–59 Veils, he eliminated the priming, which permitted the color to penetrate the canvas more thoroughly and resulted in a velvety depth that calls less attention to the canvas surface. In some of the 1958 Veils, however, attention is diverted to the surface by bright flecks of pigment and granular dark areas. The granular particles are part of the final wash of black or umber that was used like a scrim to veil the brighter underlying colors. The dark paint was thinned so extensively with turpentine that the pigment particles became too separated to form a continuous film after the turpentine evaporated. The bright flecks of pigment, often orange, red, or yellow, remain as evidence of the difficulties Louis encountered when thinning the Magna to a consistency suitable for staining.

Until April 1960, he obtained Magna in tubes. Its thick, pastelike consistency was extremely difficult to grind down so as to allow it to disperse equally in the thinner. Louis voiced numerous complaints to Leonard Bocour, all of which sound much like the following: "If you

have a choice of sending Magna ground a bit more loosely . . . please do so. My hands get worn out from trying to ground the recent bees-wax stuff into a more liquid state." Where Louis was not totally successful in grinding the pigment down, large bright flecks remain as deposits that project out from the surface, unconcealed by the dark washes applied later.

Louis almost always began the Veils with bright colors. In 1958 and early 1959 he used dark washes to unify the surface, which then glows with the warmth of the underlying layers. The back (fig. 4) of *Dalet Aleph* (cat. no. 137) reveals the underlying yellows and oranges that warm its blue-gray surface. In *Yad* (cat. no. 140), Louis contrasted the bright center, in which orange, yellow, blue, and green under the last wash produce a variety of coloristic effects, with black framing wings whose depth and richness he produced by soaking pure black into the canvas. *Beth Lamed* (cat. no. 90) shares with many Veils the traces of bright hues at the periphery of the darkened image. This glow of intense colors activates the entire image, accents the subtle internal effects, and links the image to the unpainted framing margin. A detail of the lower left corner of the painting (fig. 10) shows the gemlike brilliance of the surface as well as the subtleties of linear inflection attainable with acrylic resin, which contribute significantly to the Veils' unique character.

Themes and Variations, 1959-60

Although Louis explored many dramatically different compositional ideas in 1959–60, his actual painting technique altered very little. One major change was his elimination of dark veiling washes in most of the paintings of this period to allow the bright hues to dominate. This effect was intensified by his reduction in the amount of turpentine thinner used relative to the amount of pure acrylic resin. As a thinning agent, acrylic resin permits colors to retain their full intensity, unlike turpentine, which has a dulling effect. In addition, pigment thinned with medium produces a more viscous consistency, which makes it much easier to control the paint when poured onto the canvas. This aided Louis's increased insistence on drawing as a dominant feature of his art. He also seems to have increased the amount of pigment relative to thinner, another change that heightened hue intensity.

Many of the compositional variations of this period focus on the separation of color areas, which also emphasizes the vividness of colors. This is as true of those paintings composed of a few broad color planes (cat. nos. 208–18) as it is of those with many more color areas characterized by active contours (cat. nos. 229–34, 254–60).

Unfurled Paintings, 1960–61

At precisely the moment that Louis began his series of Unfurled paintings in the summer of 1960, he grew concerned with the quality of the cotton duck canvas supplied to him by John Boyle and Company. Although he had obtained his canvas from the same firm since at least 1953, his first recorded complaint occurs in July 1960. The complaints continue at regular intervals through January 1962. Two related reasons probably provoked the complaints.

Prior to 1960, Louis had ordered canvas only ten or twenty yards at a time because his limited financial resources made larger orders impossible. After his work began to sell, he increased his orders to a full roll of one hundred yards at a time in 1960 (and to two or three hundred yards at a time in 1961 and 1962). His first complaints about the quality of the canvas directly follow the first large order.

Louis found that the cotton duck was insufficiently white and pure, an understandable concern for an artist exploring a composition whose impact stemmed from a huge central wedge of unpainted, unprimed canvas. The explanation offered to him by the manufacturer indicates that both a lowering of government standards and the use of machines to pick the cotton produced dark flecks and marks in the cotton. Despite Louis's complaints, the unpainted canvas so essential to the Unfurled and Stripe paintings appears startlingly pure and white to most eyes. But, as Greenberg once commented, "Louis bore down on everything intrinsically connected with his art. This included the weave and thickness of his canvas no less than such other things as shape, size, proportion, hue, value, edge and so on."

Louis solved the problem by ordering a more expensive higher grade of cotton duck when his improved finances permitted. He also changed from using the heavier weight No. 10 canvas to the lighter and more porous No. 12 weight. The increased porousness allowed the Magna to penetrate the canvas rapidly to produce the crisp contours so crucial to most of the Unfurleds and the Stripes.

The other change in materials significant for the Unfurleds and the Stripes was the special formula of Magna that Bocour manufactured for Louis and Noland beginning in April 1960. The pigment was suspended in a vehicle composed of equal parts of Acryloid F-10 and turpentine, with the suspending agent eliminated to reduce the thickness of the paint. The consistency of the new formula resembled maple syrup and facilitated further thinning. Louis received his first batch of the new paint on 11 April 1960, one gallon each of twenty different colors. The following year he added two more colors to complete the "palette" of his Unfurleds and Stripes.^{xi} Louis never mixed the Magna colors for the Unfurled and Stripes, preferring the pure hues

straight from the can; the only blending of colors arose from occasional bleeding and overlapping at the edges of the pours.

Louis's earliest moves in the direction of the Unfurleds (cat. nos. 307–30) reveal his experiments as much with techniques of paint application as with compositional ideas. The colors, relative to the later Unfurleds, are often pale, usually because he thinned the paint more than he would do later. An excess of medium thinner shows as a darkened halo around the color; this is evident in the second color rivulet of *Delta Psi* (cat. no. 307) and in the cadmium orange rivulet in the detail of *Beta Upsilon* (fig. 11 and cat. no. 398). Louis learned to control this effect; it rarely shows in his mature Unfurleds or in the Stripe paintings. Occasionally, an excess of turpentine thinner produced a bleeding effect in which the pigment feathers out along the edges of the pour; this was especially true of black (as in fig. 12, a detail of *Beta Iota*, cat. no. 338), the likely reason that black appears in only a few Unfurleds and never in the Stripes. Louis also sized the canvas of a few paintings that precede the Unfurleds, including *Gamma Alpha* (cat. no. 327) and *Beta* (cat. no. 328), which produced pastel colors that remain on the surface rather than soaking through the canvas.

On the whole, however, the Unfurled series displays a masterly ease and control of the paint application process. Louis poured rivulets across lengths of ten feet or more without resin or turpentine bleeds, while retaining the full saturation and intensity of the colors. He could control the flow so that neighboring rivulets do not touch at any point along their trajectories, even when the margin separating them measures an inch or less. When bleedings or overlappings were permitted, they impart subtle spatial inflections. For example, the detail of *Alpha Pi* (fig. 13, cat. no. 417) shows the spatial differences resulting from pours that bleed together wet-intowet as opposed to the overlapping of the blue on top of the red to its left that had already dried.

In addition to the striking hue intensity of the Unfurleds relative to the Veils, the other major technical difference is the quality of the paint surface. The Veils' matte surface is replaced by a wide variety of effects from matte to glossy, depending upon the proportion of resin or turpentine used as thinner. Emphasizing his complete control of draftsmanship in the Unfurled series, Louis made the surface matteness or glossiness an active factor contributing to the series' pictorial achievement.

Stripe Paintings, 1961–62

The techniques that Louis had perfected in the Unfurleds came into play when he turned to the Stripe paintings. Against a pure white field (of No. 12-weight cotton duck) Louis positioned

parallel bands of color, exploiting both matte and glossy effects, permitting hues to bleed and overlap (fig. 14, a detail of *Vega*, cat. no. 463) or carefully abutting them (fig. 15, a detail of *Horizontal VIII*, cat. no. 640).

Between *Vega*, a Pillar from 1961, and *Horizontal VIII*, a narrow Stripe from 1962, his method of applying the paint underwent a marked change. In the former, he tacked the canvas to a work stretcher and poured the paint from top to bottom, draining the excess off along the bottom. The irregular drips often evident at the top of the canvas (see cat. nos. 424–42) were caused when the paint dripped from its container backward down the flap of canvas that lapped over the top of the work frame; these drips ran in the direction opposite that of the pillar. In some 1961 Stripe paintings, including *Vega*, broad areas of the pillar ran off the canvas at both top and bottom.

In the 1962 Stripe paintings, Louis carefully controlled the end tips of the stripes. In most cases, he did this only at the top, draining the paint off the bottom (cat. nos. 512–630). Both ends of the stripes in the group of horizontal Stripe paintings (cat. nos. 638–52), however, are carefully drawn. His widow recalls finding "daubers" in Louis's studio, long sticks with cheesecloth wrapped around one end; if these were used to "draw" the late Stripes, it would account for the regularity of the tips of each color, as evident in fig. 15.

Although correctly exhibited when hung horizontally, the horizontal Stripe paintings were clearly positioned vertically on Louis's work stretcher, as were his other paintings from the series. The major difference was that he stopped both ends of the stripes within the field of the canvas, reserving a margin of unpainted canvas on all sides of the painted image. This was also the case with the three paintings he directed to be stretched as diagonal stripes (cat. nos. 653–55). In these cases, the unpainted area was broad enough to permit the canvas to be stretched on a square stretcher with the stripes positioned diagonally, rather than horizontally, within the square.

The hue intensity of the Stripes is equally striking as that in the Unfurleds; the essential difference is their abutment here, which emphasizes the vibrations of contrasts, as opposed to the fauvist use of the white canvas margin between most colors in the Unfurleds. When Leonard Bocour first saw Louis's Stripe paintings in 1961, he was overwhelmed by the artist's ability to maintain the equal intensity and saturation of each stripe along its entire length, a feat Bocour could not duplicate when testing the paints for these same qualities. He recalls asking Louis how he had achieved such results, to which the painter reportedly replied, "You got something to say, you say it."

NOTES

- i. References consulted in the preparation of this chapter can be found in the section of the Bibliography under the heading "Acrylic Paints" (Bibliography p. 259).
- ii. Francis Valentine O'Connor and Eugene Victor Thaw, *Jackson Pollock: A Catalogue Raisonné of Paintings, Drawings, and Other Works*, vol. 4, New Haven, 1978, p. 219.
- iii. Leonard Bocour, letter to the author, 21 September 1972.
- iv. Copies of Morris Louis's letters to Leonard Bocour are in the Morris Louis Archives.
- v. Russell O. Woody, Painting with Synthetic Media, New York, 1965, p. 29.
- vi. The characteristics of acrylic resin paint must not be confused with those of polymer emulsions, which are far more widely used acrylic paints. Manufactured under such trade names as Liquitex and Aquatec, these paints are water miscible, unlike Magna, which is miscible in turpentine. The medium used for polymer emulsions, often Rhoplex, is milky in appearance, unlike the clarity of the Acryloid F-10 used for Magna. Emulsions tend to stay on top of the canvas unless a water-tension breaker is added.
- vii. Clement Greenberg, "Louis and Noland," Art International 4 (May 1960), p. 28.
- viii. Louis's studio from 1952 until his death was in his Washington home in the room that previously had served as the dining room. The space measured 14 feet by 12 feet 2 inches. The work stretcher was as large as the space of the room and dimensions of the canvas would permit.
- ix. Morris Louis, letter to Leonard Bocour, 21 May 1958. Since Louis kept all his receipts for painting supplies, it is possible to state with some accuracy how much thinning was required to obtain the effect he desired. For example, in 1958 his receipts show that he purchased 807 two-ounce tubes of paint, 175 gallons of Acryloid F-10, and 195 gallons of turpentine. This is about twenty-nine times as much thinner (resin and turpentine) as paint. If divided by eighty-five, the number of paintings made in 1958, this comes to about nine tubes of paint and four and a half gallons of thinner per painting.
- x. Clement Greenberg, "Postscriptum, November 1966," *Morris Louis 1912–1962*, Museum of Fine Arts, Boston, 1967, p. 84.
- xi. Louis's palette in 1960–62 consisted of the following Magna colors: Green Earth, Oxide of Chromium (1962 only), Bocour (phthalocyanine) Green, Permanent Green Light, Cadmium Yellow Pale, Cadmium Yellow Medium, Cadmium Yellow Deep, Cadmium Orange, Cadmium

MORRIS LOUIS (1912-1962)

Red Light, Cadmium Red Medium, Cadmium Red Deep, Cobalt Violet, Bocour (phthalocyanine) Blue, Ultramarine Blue, Cerulean Blue, Cobalt Blue, Raw Sienna, Raw Umber, Venetian Red, Yellow Ochre, and Alizarin Crimson. He did not use the other ten available Magna colors. See p. 51 for a chart of Magna colors.

xii. Cited in Michael Fried, *Morris Louis*, New York, 1970, p. 38, and in an interview with the author, 22 October 1975.