



**Foundation Number:** HSF0172

**Artist:** Hedda Sterne

**Title:** Airport

**Date:** 1949

**Support/Medium:** Oil, pastel, and graphite (est.) on Canvas

**Dimensions:** 24 in. X 30 in.

**Owner:** The Hedda Sterne Foundation, New York, NY

**Frame:** silver-leaf frame

**Date of Treatment:** 09/01/2017

**Conservator:**

Kimberly Frost, Master's Candidate,  
Conservation Center, Institute of Fine Arts,  
NYU



Under the supervision of **Kristin Patterson**,  
Instructor, Conservation Center, Institute of  
Fine Arts.

Before Treatment Image 9/17/2017

**Photography:**

Camera: Nikon D810 camera with 60mm lens, ISO100, f8.0, exp. ½ sec.

Before treatment: digital photography in normal, raking, and ultraviolet light; front and reverse.

During treatment: digital photography with normal and ultraviolet light, X-radiography, and Infrared reflectography.

**Analytical Techniques:**

Examination under ultraviolet radiation with UV Systems TripleBright II LW370 Lamp, long wave, UV peak: 368 nm.

**Infrared reflectography**, FLIR SC2500 Camera and IR Vista software

**X-radiography**, Phillips MG161 X-ray Radiography system and Carestream INDUSTREX HPX-1 Digital system kV:20 mA: 5 Exposure Time: 90 seconds.

**Cross-Section Analysis:**

Microscopy, Leica DM4000 B light microscope with Spot Flex camera and SpotFlex Advanced Software. Reflected and Ultraviolet light.

**Signature, Marks, Labels and Notations:**

*Front:* Signature in graphite (est.) at top right corner: Hedda Sterne 1949.

*Reverse:* Top turning edge, Ph 24 x 30

Reverse of canvas, Up, Airport, Flight (strikethrough), N8 XI (est. crayon). 8 XI (pencil), Airport (est. crayon), 24 x 30 (white chalk)

On Stretcher bars, proper right, sticker HSF 172, 213 (marker) proper left, CDS 62403 HS29 (sticker)

**Provenance:** Foundation established by the artist's will and endowed by her estate in 2013.

**Treatment History:** No previous restoration is detected.

**Art Historical Background:**

Hedda Sterne was born in Romania in 1910 and became an artist active in Dada and Surrealist art during the 1920's. Forced to flee Europe in 1941, she settled in New York after being recommended to Peggy Guggenheim and making connections to gallerist Betsy Parsons. During the 40's and 50's Sterne was inspired by her new home. The painting, *Airport*, is part of her series of machine paintings, which strive to capture the motion, architecture and scale of this new urban setting.

Hedda Sterne did not always add signatures to her works before showing them in galleries. This might point towards her view of her paintings as evolving works, which she could revise. The historic documentation of *Airport*, testifies to these aspects of Sterne's creative process. A profile of Sterne was published in Life Magazine in August 1950.<sup>1</sup> This article includes a color photograph of the artist against a wall of paintings, including *Airport*, which is hung in the opposite of its current orientation. A black and white photograph and brochure dated to the same year, confirm the exhibition of this work at the Betty Parsons Gallery, New York during a solo showing of Hedda Sterne's paintings in Dec. 18, 1950 – Jan. 6, 1951.<sup>2</sup>

These images show a different composition than the present surface of the painting. Two abstract rectangle forms occupying the top right corner of the painting in 1950 are no longer visible. Dark vertical and curved lines bisecting the lower right corner and an abstract circular shape at the center of the bottom edge have also been covered. On the left side of the painting strong vertical fields of blue and a lighter green-blue color have been painted over with circular strokes of peachy-tan, grey, and blue. The first documentation of the current state of *Airport*'s surface, dates to April of 1958.<sup>3</sup> Clearly, this work was repainted after the 1949 date associated with Sterne's signature, located in what is now considered the top left corner. Though the historical documentation shows significant changes made to the work, it might have been Sterne's wish to revise this composition while still considering it as created at an earlier date.

**Examination and Condition Report:****Support***Construction*

The stretcher is made from four members, each 4cm wide and 1.5 cm deep, connected with mitre joins. The bars appear to have a raised bevel on their outer edge, and are flat on their interior edge. Eight wooden keys are in place (two in each corner). Five keys appear to be original to the stretcher and made from the same wood, three unoriginal replacement keys are of a lighter wood color. All stretcher keys are loose in their slots and do not provide good support to the stretcher frame or appropriate tension on the canvas. Keys easily fall from their positions during routine handling. The plain weave canvas is of medium weight. The fiber appears to be made of cotton based on its brittle nature and short breaks in threads observed in losses during sample collection. The canvas is a dense modern weave with an uneven low topography texture created by slubs throughout the fabric.

The canvas is attached at the sides of stretcher bars with round flat-headed nails. Corners are folded to overlap excess fabric at the top and bottom on the proper right side of the work and corners are turned the opposite direction on the proper left, overlapping on top of the proper left stretcher bar. Folds of the turning edge are secured only at the sides with excess fabric of 3-5 cm along all edges and corners remaining loose at the back.

---

<sup>1</sup> See Appendix II Archival Documentation, Image 1, 2. Source: Time Magazine Aug 27, 1951 Vol. 31, No. 9 pages 50-54. Published by Time Inc.

<sup>2</sup> See Appendix II Archival Documentation, Image 3, 4.

<sup>3</sup> See Appendix II Archival Documentation, Image 5. This earliest documentation is a 35 mm slide photograph with inscribed date of April 1958, from the Hedda Sterne Foundation, 16 E 71st St, New York, NY 10021.



The tacking edge shows signs of a previous conformation. Cusping patterns and attachment holes that do not appear related to the present stretching of the canvas are observed along the excess material of the proper right and bottom turning edges. The straight edges of the proper left and top edges do not show these patterns. This difference might indicate a re-stretching of the canvas with possible alteration in size presumably made by the artist as part of her working process.

#### *Condition*

The stretcher is in good condition with no warping, though is under-built and does not provide adequate support for a canvas of this size. Its joints are slightly expanded on the proper right side (2mm.) while those on the proper left are unexpanded. The canvas is securely attached to the stretcher and its nails are well seated in the stretcher bars.

The canvas retains good flexibility and strength, and is slightly darkened to a light brown color. The canvas is slack with pronounced undulations across the total surface area. Overtime, movement of the loose canvas has caused repeated contact with the inner edge of the stretcher bars, resulting in raised stretcher bar marks and associated mechanical cracking in the paint layers. This is most notable when viewing the canvas in raking light.

#### **Ground layer and Underdrawing**

##### *Construction*

A ground of cream-colored primer is thinly and evenly applied across the canvas extending to the cut edges. Based on the appearance of pinhole bubbles in areas of exposed ground it appears to be a commercially applied priming layer. Areas of ground remain purposefully exposed within the composition. Two types of drawing media are evident: lines that appear dry and thin are estimated to be a graphite pencil; a second drawing material creates thick, soft lines in deeper black, and is estimated to be of an oil stick or crayon bound pigment. Drawing media is both painted over and left exposed at the uppermost layer throughout the image.



Image 1: Detail image in raking light showing pitted bubbles found across visible areas of the ground layer.

Image capture with infra-red reflectography shows that multiple changes were made in the drawing and paint layers underneath the present surface of the painting, both during its first iteration and Sterne's later interventions. Thin lines of a dry, carbon-rich medium are seen in the detailed drawing of the horizontal



abstracted rectangle in the upper right quadrant, which is visible in the archival images of 1950. This same medium is used to outline a circular design at the center of the lower edge. This element appears to have been partially painted out by Sterne before 1950. In the archival images dated to 1950 and 1951, the circle's exterior shape is visible while its interior angular lines are not visible.<sup>4</sup> In the current state, this design is barely visible when viewing the painting in normal light. Finally, a bold and thick line of a carbon-rich material, possibly a softer drawing medium or liquid medium is seen in the top left quadrant. This distinct medium fills the quadrant with triangles, small circles and a jagged curved line, none of which are visible in the 1950 archival images and must have been painted over by Sterne before this date.



Image 2: Detail images from infrared reflectography of Hedda Sterne's *Airport*, 1949.

### *Condition*

The ground has a stable adhesion to both the canvas and paint layers. Where visible, the exposed ground layer has a matte surface, which appears aged and is easily susceptible to cracking and loss. A large area of ground remains exposed on the proper right side, in the front cylinder of the horizontal airplane-like shape. In the top half of this shape, there is a long, thin horizontal loss in the ground layer about 1.5cm in length. In the bottom half of this zone, a band of long and thin horizontal cracks measuring about 5 cm long and 3 cm wide has resulted in more losses of the ground, ranging from 1 to 3 mm in size.

Two small round losses of about 2 mm (from bottom left corner: 19.5 cm to right and 14.5 cm from the bottom; 71.2 cm to the right and 12.6 cm from the bottom) across the paint layer are also missing their ground layer, showing bare canvas directly exposed on the surface. However, these losses do not appear related to instability of the ground but rather to the topography of the painted surface. Both appear over protruding canvas slubs or in areas of thick paint build up, and might have been susceptible to loss from other mechanical forces.

The excess canvas of the tacking edges, which has been folded to the reverse, also demonstrates the weakness of the ground layer. Open movement of the loose fabric has caused continual crumbling of the ground. Creasing patterns have resulted in long linear losses along the edges and patches of friable flaking ground especially in the corners. Even during minimal careful handling, displacement of the unsecured canvas caused small losses of the ground layer, indicating the fragility of the ground layer.

### **Paint Layer**

#### *Construction*

The paints that appear across the surface of the canvas differ in color, sheen, texture and application. The thickness and application of paints varies across the surface. All applied paints show directional pulls and local pooling of the paint film while they were still wet and appear to be applied by brush. The paint

---

<sup>4</sup> Appendix II: Archival Documentation Images 1- 4.



layers are constructed by application of wet paints over dried paint layers, with the bottom layer often remaining visible but not mixing into the newly applied color. Painted lines demarcating the central shape have a rich, thick impasto, mimicking the surface quality of the heavy drawing medium, estimated to be an oil-stick or pastel, which is also applied along the outlines of the outer circle, its interior shapes, and the rectangular shapes on the right side. Blue, black, and yellow highlights have a thick impasto indicative of viscous paint applied with loaded brush.

Four small samples were removed from losses along the edges of the painting. Prepared cross-sections of these samples confirm the artist's technique and materials.<sup>5</sup> In sample 1, a peachy-tan paint and a cool-toned green paint are seen side-by-side as distinct brushstrokes that were applied one after the other and deposited horizontally across the surface. Comparing sample 1 with sample 2, the order of the thin red layer and a thick white paint layer are reversed, demonstrating the inconsistency of the artist's layering during the painting process. The top layer in sample 3 is a thin, matte black layer. Under microscopic examination, the black pigment grains protrude above a thin, yellowed binder layer, which does not form a full and continuous film. This suggests the use of a lower-weight medium such as pastel or oil stick rather than a liquid paint. Finally, sample number 4, removed from an actively flaking area, demonstrates the internal cleaving observed in some paints. In this sample two layers of mixed white paint are followed by a grey-tan paint layer, and then a cool light green. This final layer appears to have poor internal cohesion, as it is seen to split horizontally across its center. The surrounding losses and active flaking, might also suggest poor adhesion to the underlying layer.

When observed under ultraviolet light, the surface paints show three distinct reactions: a light blue fluorescence, a yellow-green fluorescence, or a lack of fluorescence. This may indicate that the artist used paints of varying binder types. A wide range of commercial paints were available during the 1950's. The pigment particles observed in the prepared cross sections are small and consistent. The artist's repetition of paints with the same pigment and composition, while altering their application also points to consistent and re-usable materials. This along with the variety of color and gloss of the applied paints suggests that Sterne most likely used commercially produced paints and mediums.

### *Condition*

Though the paint layers are generally in fair condition; differences in medium and application technique have led to differences in condition across the surface. Some colors exhibit localized areas of drying cracks, for example the teal found at 10-18 cm to the right and 39 cm up from the bottom left corner. Many areas have developed a visible but stable network of fine craquelure, especially the red, green, orange and white, near the center of the large circular design. Some cracks in these otherwise stable networks are slightly raised, with motion visible upon close observation. Other craquelure networks are lifting or actively flaking especially at the bottom edge 34 – 66 cm from the lower left corner, and two other localized areas in the right half of the painting.

Further cracking is prominent along all turning edges and corners. These cracks are stable but appear visibly open, often with cupped edges that reveal the color of the paint layer below. In some areas raised cracks have caused further loss along the turning edges of the painting. Especially noticeable are the small areas of discrete loss in field of blue at the right of the top edge and in the turning corner along the perimeter of the entire tacking edge. There does not appear to be any surface loss due to abrasion, but the surface does have noticeable burnishing at raised areas of impasto. Though the painting's surface remains largely intact, its varied techniques have aged into in a delicate surface which requires stabilizing treatment to prevent further loss.

### **Varnish & Surface**

---

<sup>5</sup> See Appendix I: Treatment Documentation, Table 1.



The painting appears unvarnished. An even layer of dirt and grime is present on the painting's surface. This dirt layer is grey in color, distorting the gloss and color of the paint below. The reverse of the canvas holds a heavier layer of dirt and dust. A brown-orange stain located at 69-72cm across and 22-24 cm up from the lower left corner, disrupts the circle and spiral design near the right-side edge. Its shape tapers from a narrow entry point to a wide fan with three rounded edges at the bottom. The bottom half is noticeably thicker with a three-dimensional bulging topography. The stain appears to be a viscous, resin-like material but does not hold any particles that would indicate an intentional pigmentation. The stain does not appear in archival images dating to 1950 or 1951, but it is documented in the later 1958 image. The bright orange fluorescence of this stain under UV light, contributes to the conclusion that it is not original to the paint layer.

### Proposed Treatment

1. Unframe the painting for examination and treatment.
2. Consolidate and secure lifting paint, raised cracks and edges of losses with an aqueous adhesive at appropriate strength.
3. Dry cleaning of the surface with soft brush and HEPA filter vacuum at low pressure to remove loose dust.
4. Further cleaning of the surface with an appropriate aqueous-based solution to remove surface soiling and stains.
5. Fill paint losses with a conservation appropriate revisable media.
6. Compensation of lost areas with inpainting of a reversible media.
7. Consider auxiliary supports or keying the stretcher to mitigate the impact of stretcher bars.

### Treatment Steps

1. The silver-leafed frame was removed from the painting to prepare it for treatment. The frame lacks any padding in the rabbet, or a supportive backboard. Felting should be added to protect the painting's surface before it is reframed, and a backing board should be considered.
2. Lifting paint, raised cracks were consolidated by applying sturgeon glue diluted at 5% in water, and locally applying gentle heat and pressure until no lifting motion was observed in the paint layer. Consolidant was also applied to the edges of existing losses to prevent future damage, especially in losses of the ground layer throughout the entire turning edge.
3. The front and reverse of the canvas were dry cleaned with a soft brush and HEPA filter vacuum at low pressure to remove loose dust.
4. The reverse of the canvas and the stretcher bars were cleaned with vulcanized rubber soot sponges to remove dry dirt and soiling. Inscriptions in dry media were gently cleaned once and then avoided. The front of the painting was then dry cleaned with fine-cell non-latex (makeup) sponges.
5. Cleaning tests were performed with solutions of: water, 1% ecosurf EH9 from Dow Chemical (surfactant) in water, 1% Tri-ammonium citrate (chelator) in water, and 1% ecosurf and 1% Ammonium citrate in water. The solution containing both ecosurf and ammonium citrate was chosen as the best cleaning solution since it removed the most surface soiling with the least amount of physical action on the delicate paint surface, while acting at a controllable rate.
6. The surface stain was found to be only slightly water soluble and necessitated solvent removal. A 2:3 ratio of ethanol and diacetone alcohol was used to reduce the stain residue. After two passes with the cleaning solvent, it was decided to switch to a rigid gel delivery system out of concern for the mechanical action of swab cleaning.
7. A rigid gel was made with 4% food-grade agar, and allowed to absorb in test cleaning solutions of water with 1% ecosurf and 1% Ammonium citrate, ethanol, and the 2:3 ratio of ethanol and diacetone alcohol. Best reduction in the stain material was observed using the gel with 2:3 ethanol and diacetone alcohol. The agar gel was cut to the full shape of the stain and allowed to absorb



the solvent fully before being applied for 30 minutes, checking progress every 5 minutes. After this time, no further cleaning action was observed.

8. Solvent cleaning of the stain did increase raised edges of craquelure in the paint layer. These were consolidated by applying sturgeon glue diluted at 5% in water. No further cleaning was possible and it was decided to reduce the impact of the stain with reversible inpainting.
9. Losses in the paint layers were filled with a gesso made from 7% rabbit skin glue with calcium carbonate and white kaolin clay. After dry, fills were shaped to an appropriate texture using a scalpel and fine metal or wooden tips.
10. Lost areas were then compensated with reversible water-soluble inpainting materials. A mixture of gouache and watercolor was suitable for areas with opaque colors and a delicate eggshell shine. Further gum arabic binder was added, as necessary, to increase gloss and match surrounding paints with more shine. In matte areas, Rembrandt artist pastels were used for inpainting. Pastels were applied both as a dry powder using by a small, cut sponge, and as a paint using a wet brush, depending on the desired concentration and coverage.
11. In the future, humidification treatments to reduce canvas undulations; and adding auxiliary supports or keying the stretcher to mitigate the impact of stretcher bars should be considered.





APPENDIX I: Treatment Documentation



Image 1: Before Treatment, Front in normal light.





Image 2: Before Treatment, Front in raking light



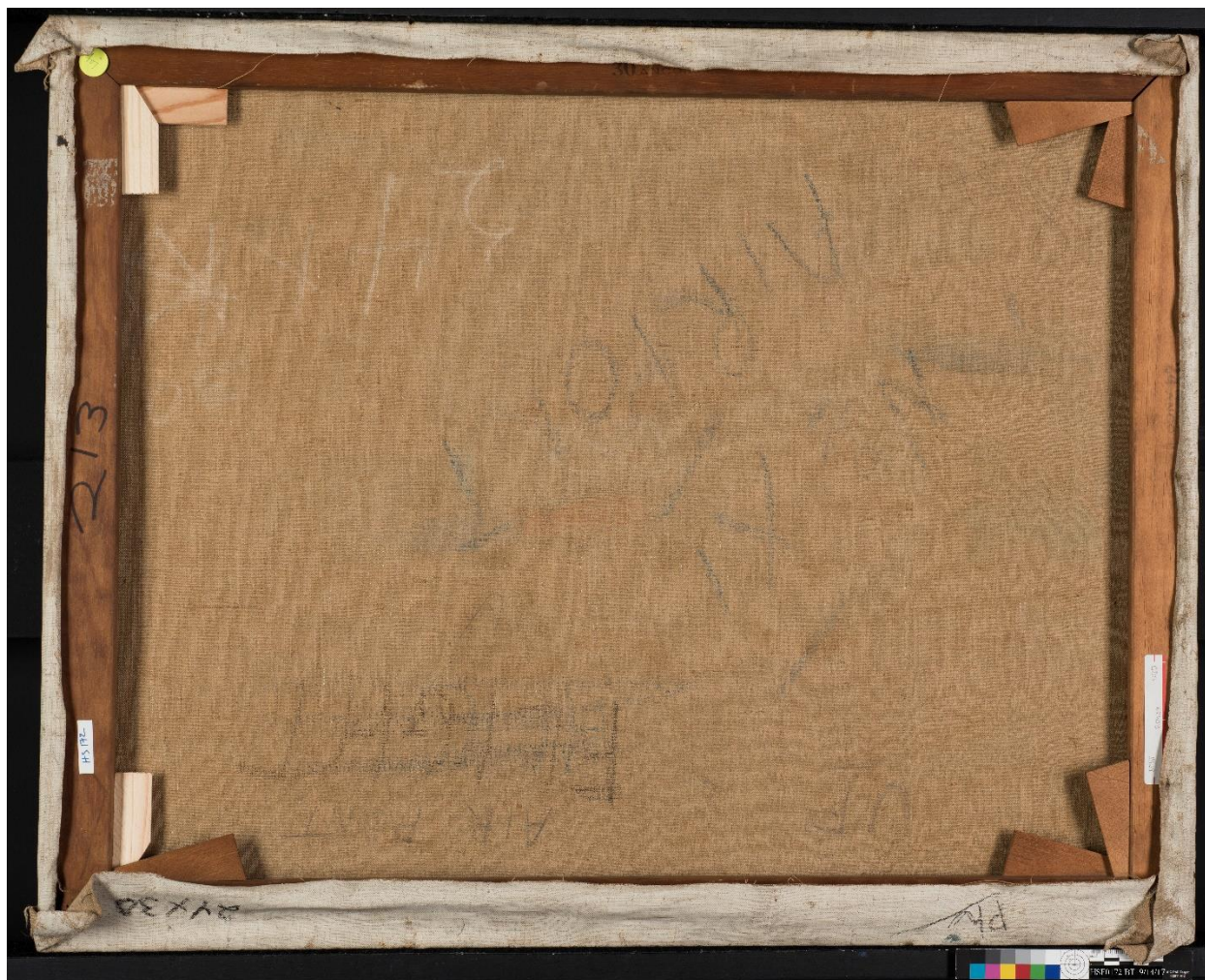


Image 3: Before Treatment, Reverse in normal light.

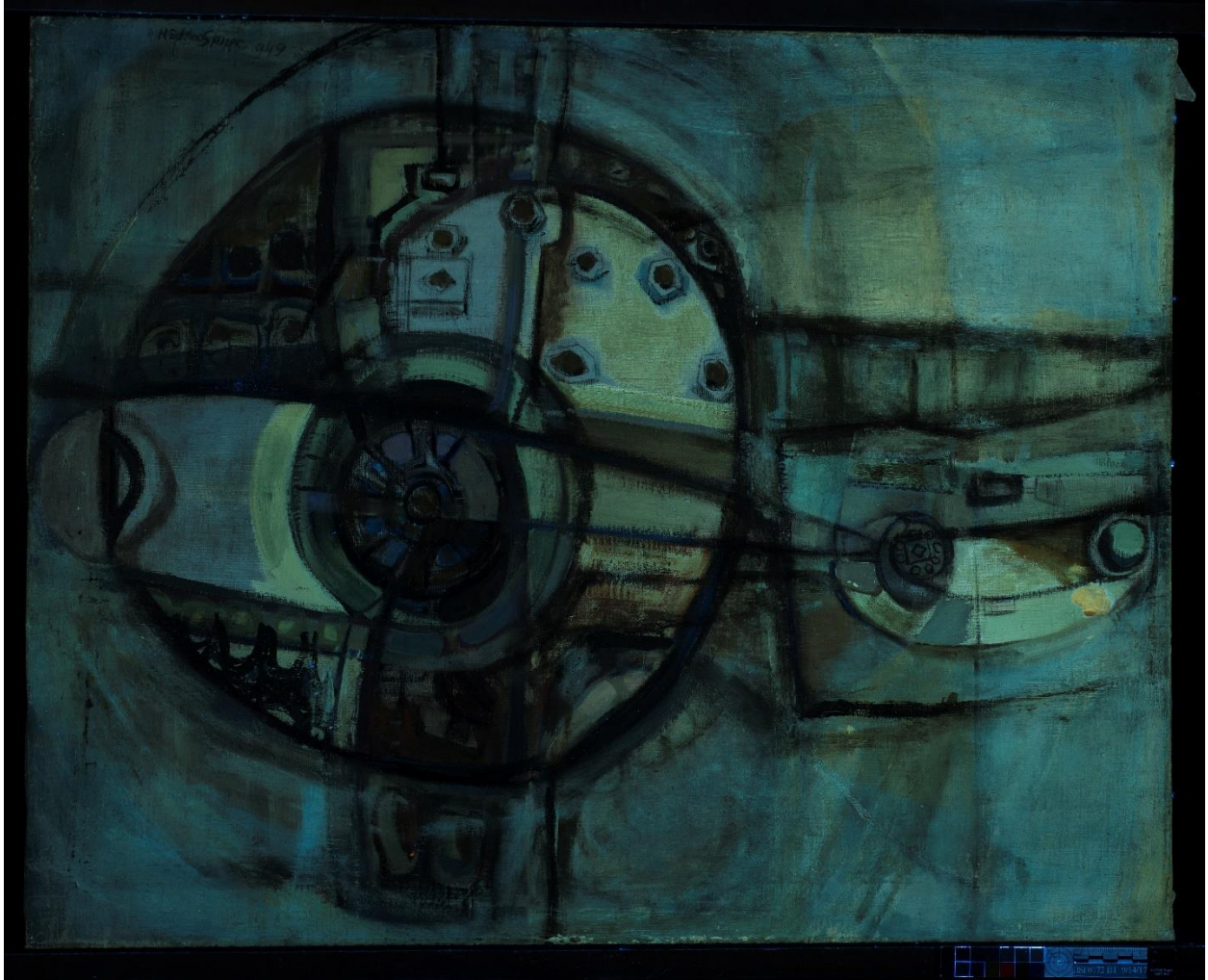


Image 4: Before Treatment, Front, UV radiation.



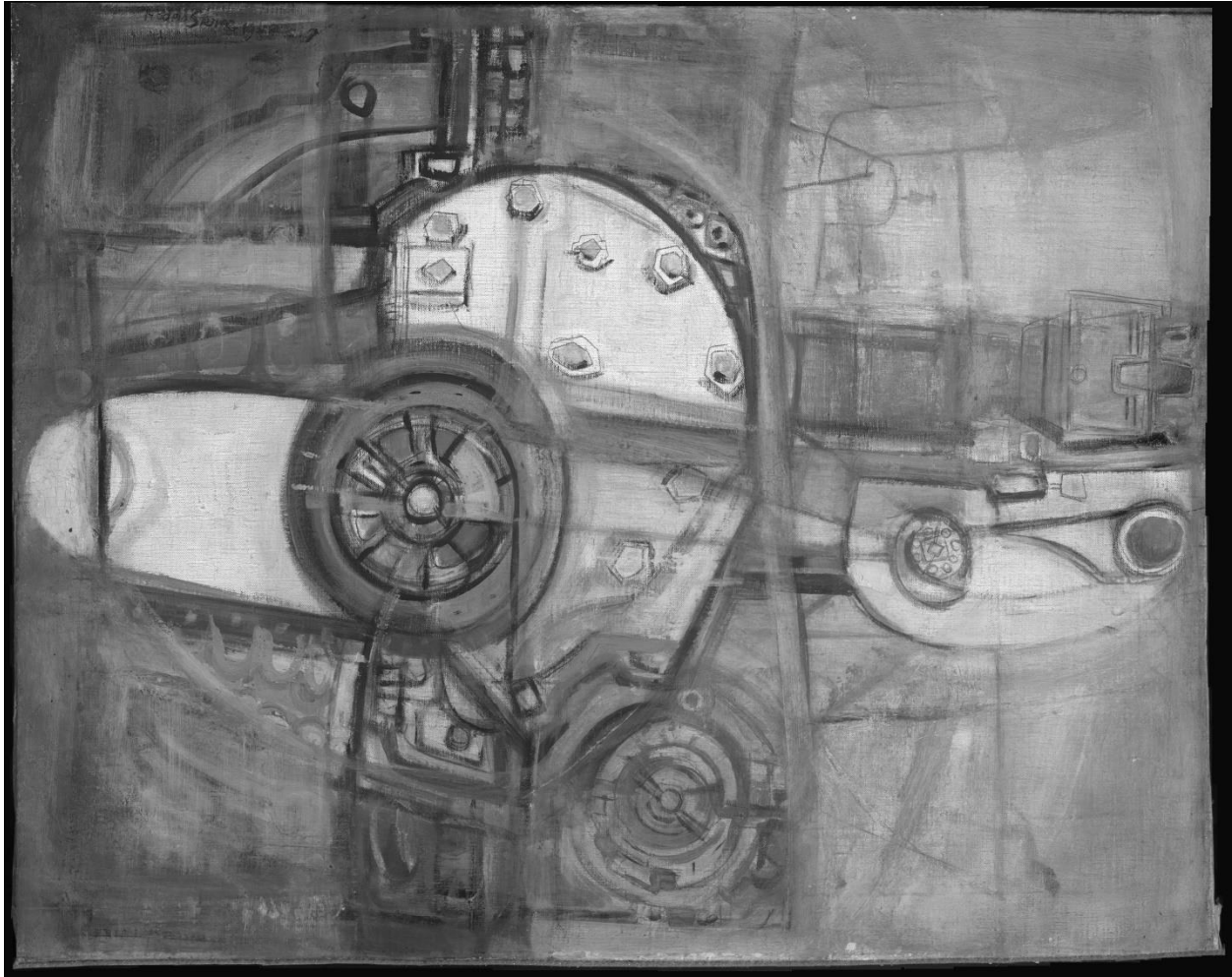


Image 5: Before Treatment, Front, Infrared Reflectography Image with FLIR SC2500 Camera and IR Vista software.

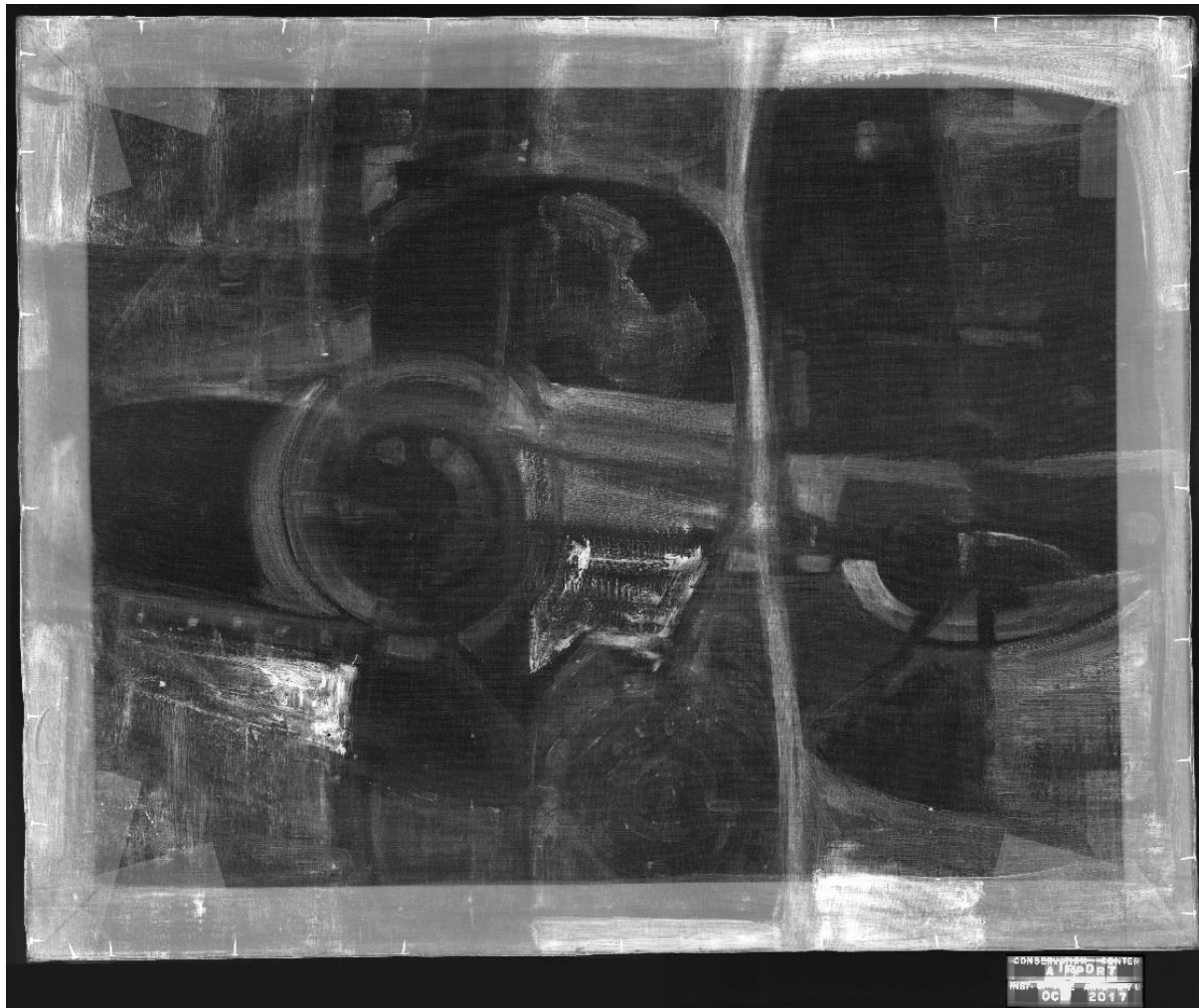


Image 6: Before Treatment, Front, X-radiograph of *Airport*.









- |   |  |
|---|--|
|  cross section sample locations    |  lifting and active flaking |
|  staining                          |  drying cracks              |
|  losses in ground / canvas visible |  raised cracks              |

Image 7: Before Treatment Annotated image showing surface conditions.





Image 8: During Treatment, Front, photograph in normal light. Lower half of the painting has been cleaned with aqueous solution.

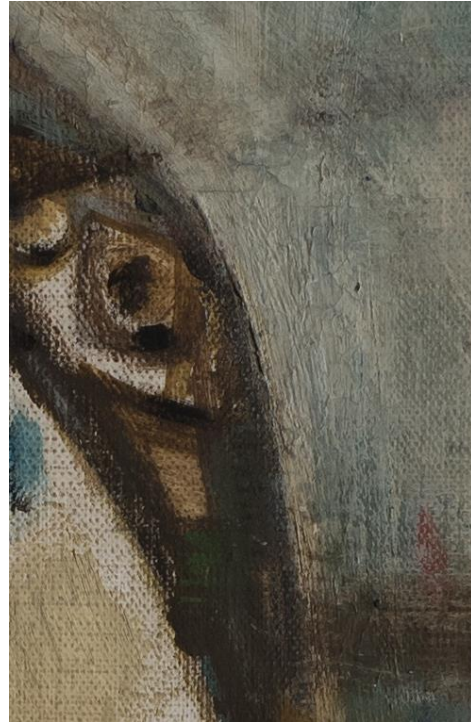


Image 9: Left, detail before treatment in raking light. Right detail after treatment in raking light.

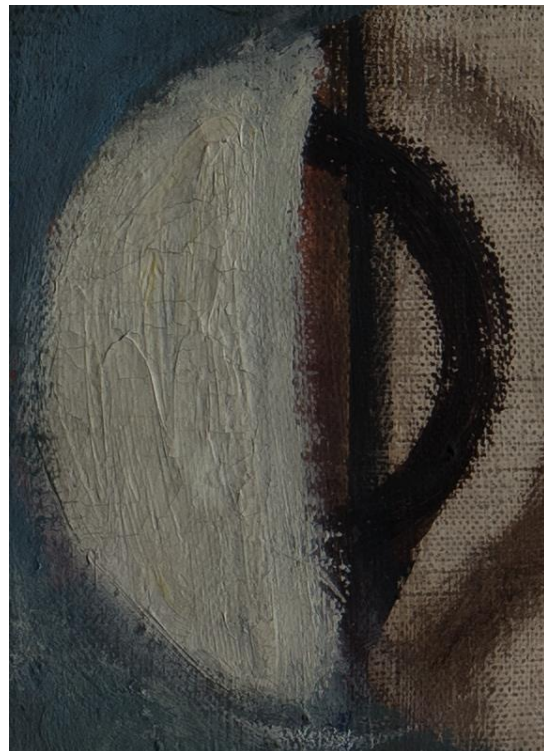


Image 10: Left, detail before treatment in raking light. Right detail after treatment in raking light.





Image 11: Detail, Before treatment in raking light.



Image 12: Detail, After treatment in raking light.





Image 13: After treatment, front in normal light.



Image 14: After treatment, front in raking light.



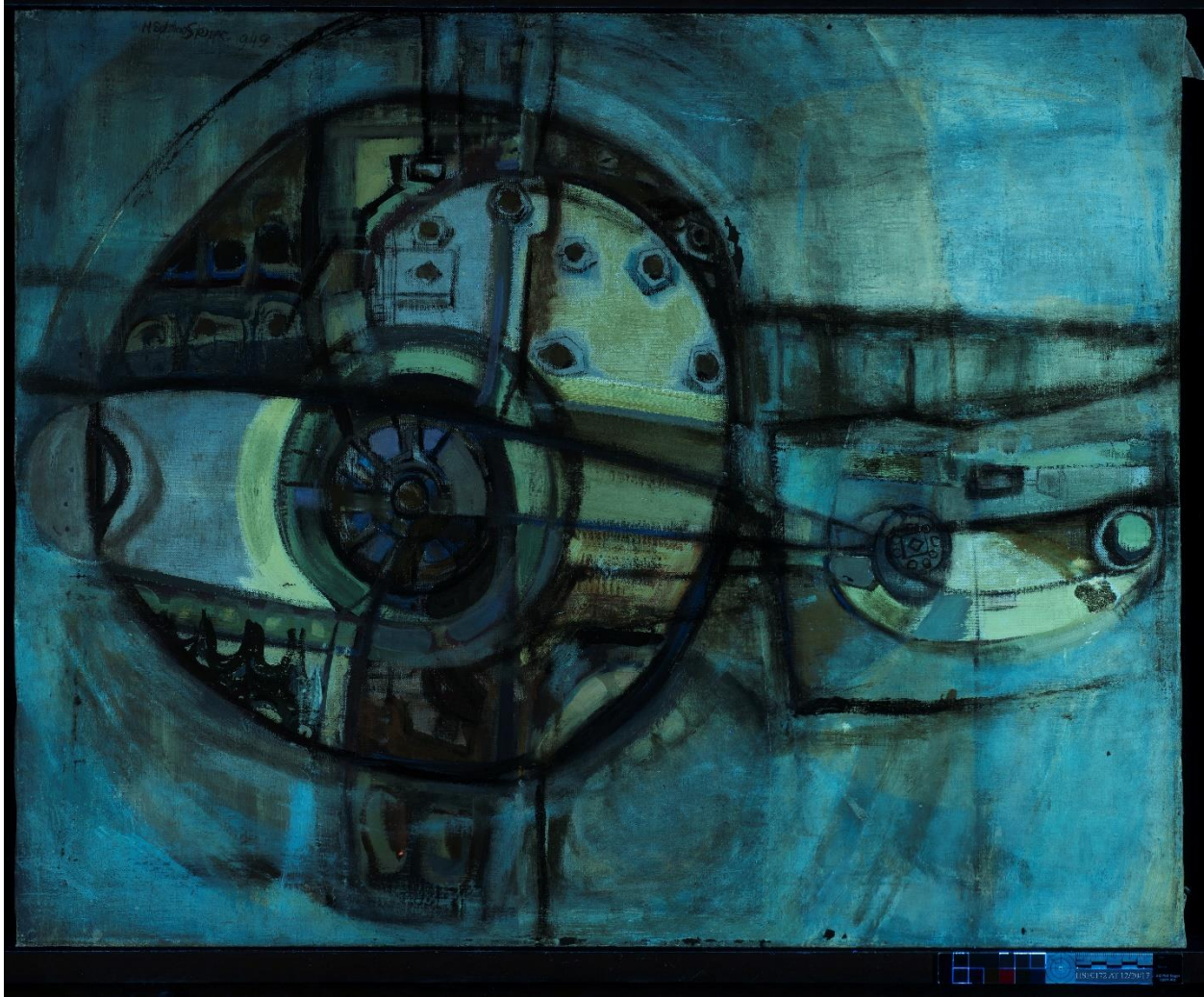
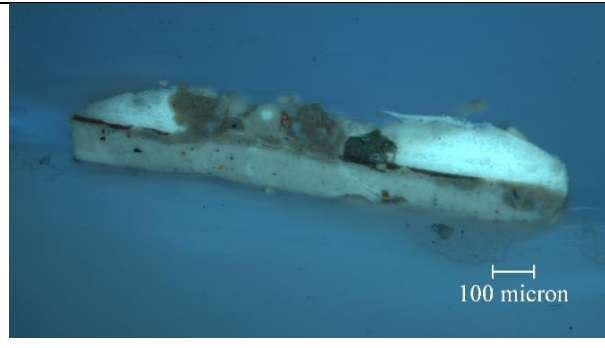
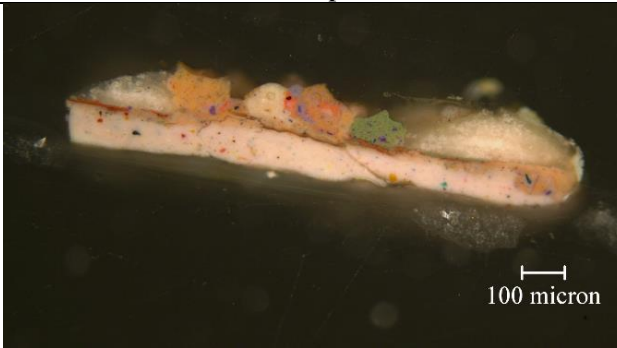


Image 15: After treatment, front in UV radiation.

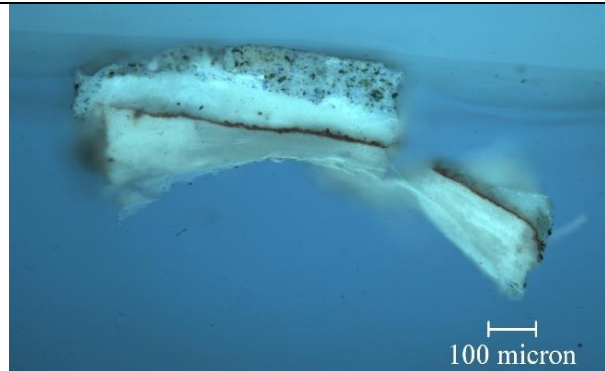
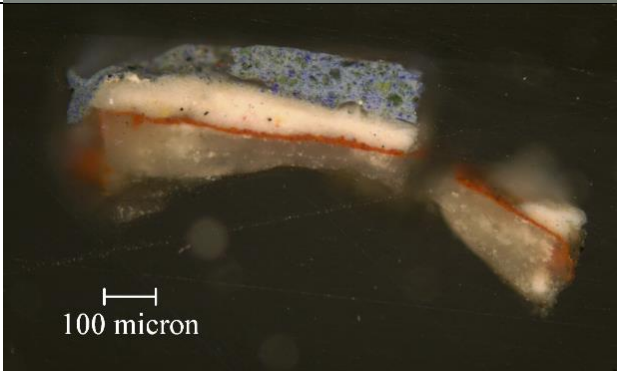




Table 1: Cross Section Samples. Locations measured from the bottom left corner of the artwork

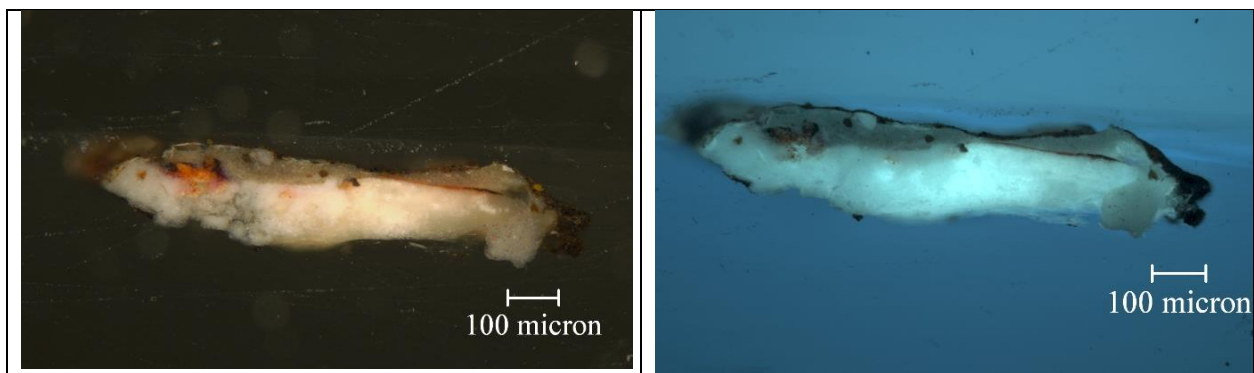


Sample 1: Location 34.9 cm. to the right and 0.1 cm. to the top

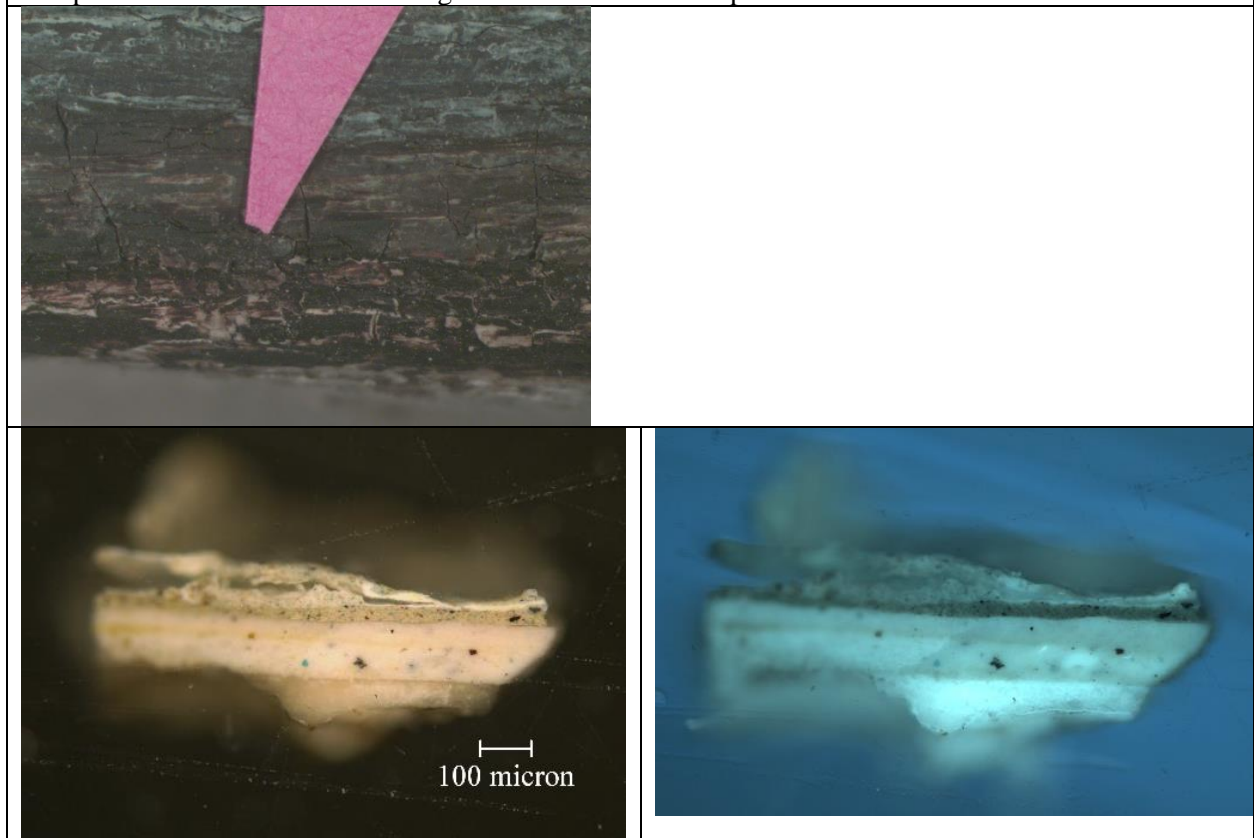


Sample 2: Location 25.5 cm to the right and 60.9 cm to the top





Sample 3: Location 52 cm/ to the right and 0.15 cm to the top



Sample 4: Location 1.3 cm to the right and 60.9 cm. to the top







## APPENDIX II: Archival Documentation



Image 1: Hedda Sterne and her paintings, page 51, Time Magazine Aug 27, 1951 Vol. 31, No. 9.



Image 2: *Airport* in 1951, cropped from Time Magazine page 51.



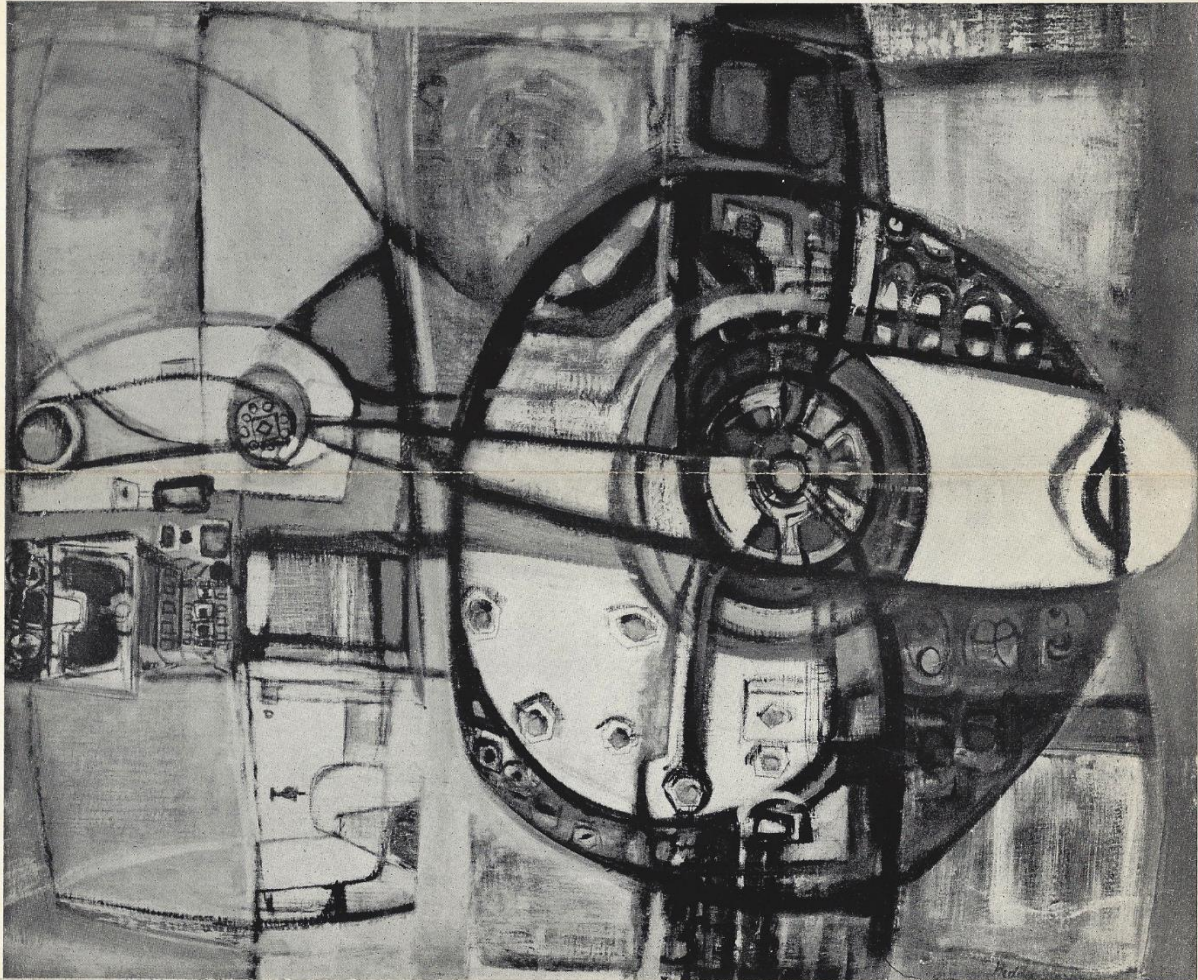


NYU

INSTITUTE OF  
FINE ARTS

HSF0172

2017



Hedda Sterne *Paintings*

Dec. 18 1950 to Jan. 6 1951

Betty Parsons Gallery 15 East 57th St., New York, N. Y.

Image 2: Brochure from Betty Parsons' Gallery, New York for a solo showing of Hedda Sterne's paintings in Dec. 18, 1950 – Jan. 6, 1951. Source: Hedda Sterne Foundation, NY.



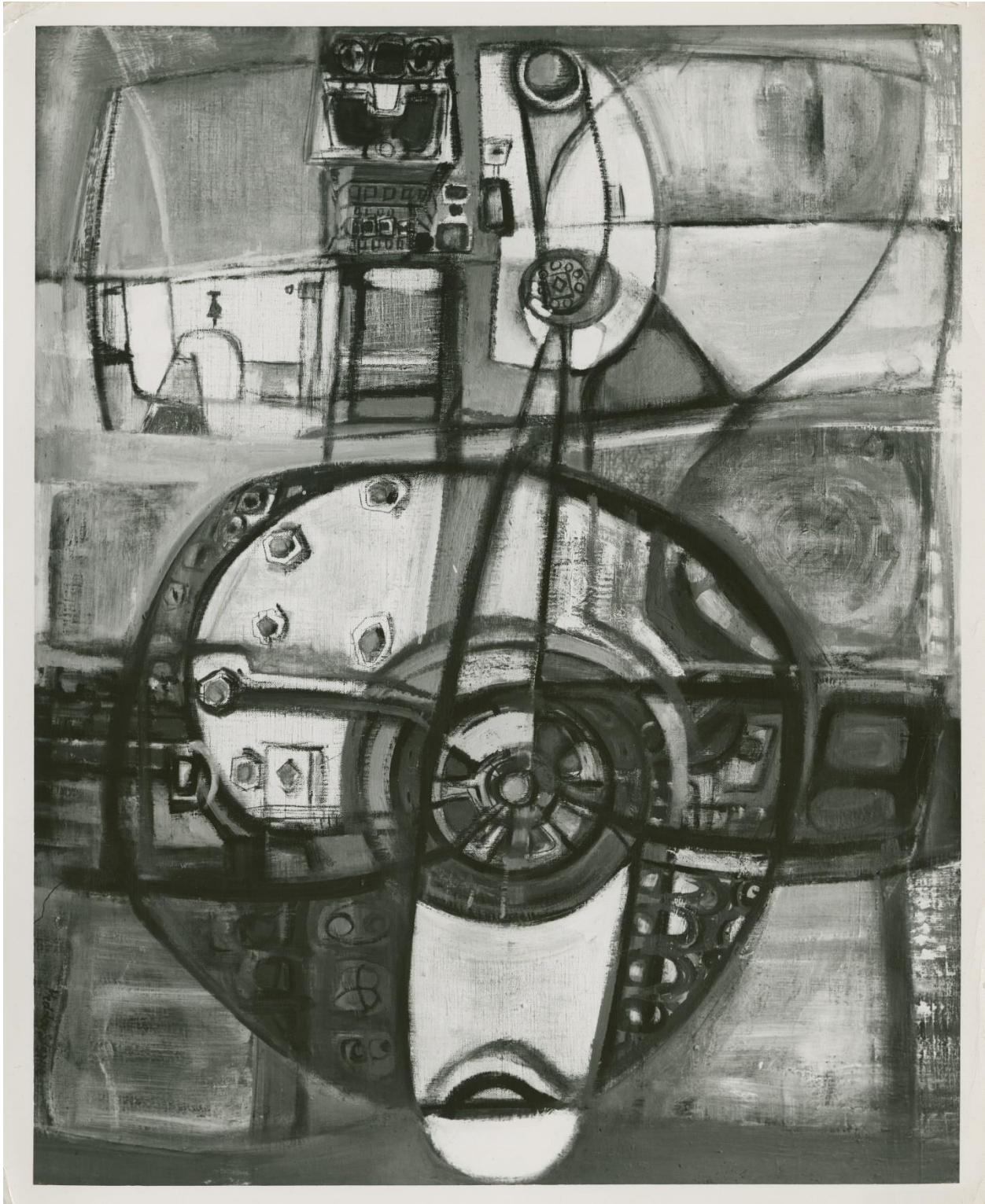


Image 3: Black and white photograph of *Airport* dated to 1950 and from Betty Parsons gallery. Source: Hedda Sterne Foundation, NY.



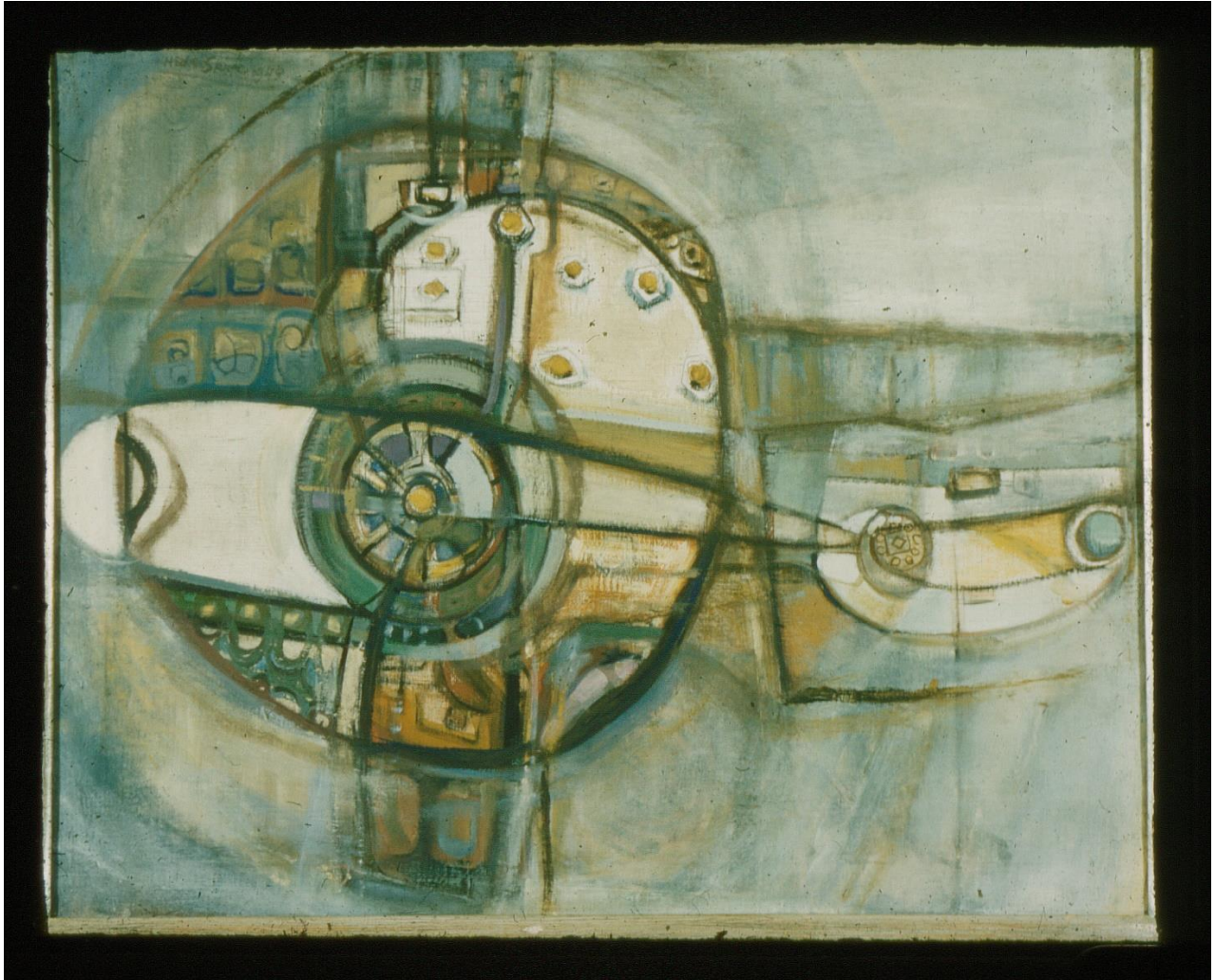


Image 4: April 1958 35mm slide photograph of *Airport*, with changed orientation in the signature.  
Source: Hedda Sterne Foundation NY.