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Marcelle Ferron for Conservators: The Artist, her Materials and Techniques from 1953 to 1960, and the Treatment of an Untitled Oil Painting on Canvas and Plywood

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In October of 2007, a small abstract painting, Untitled (1955) by Québec artist Marcelle Ferron (1924-2001), was brought to the Canadian Conservation Institute for treatment. This painting, an oil on linen canvas marouflaged onto a plywood support by the artist, is a rare remaining example of this practice by Ferron. The preliminary research into the history of the painting revealed interesting details about the artist; however, no conservation-driven literature was found. This paper introduces Ferron's motivations, unique working methods and materials to conservators, in addition to some of the artist's views on art, artists, and her own work, focusing specifically on the first half of her Paris period (1953-1960). The treatment of Untitled (1955), which was developed in light of these findings, is described. The main conservations and the presence of a discoloured varnish. In order to preserve the artist's intention and her materials, as well as her typical surface repairs and repaints, all original elements were retained. Entrance holes were drilled for the introduction of an adhesive through the back of the plywood rather than disturb the reasonably intact face of the painting. The distorted canvas was successfully restored to a planar surface through a series of moisture and heat treatments. The dark coating was removed and the painting re-varnished, revealing the composition's vibrant colours.

En octobre 2007, l'Institut canadien de conservation reçoit la toile Sans titre (1955), petite œuvre abstraite de l'artiste québécoise Marcelle Ferron (1924-2001), en vue de son traitement. Cette œuvre, une huile sur toile de lin marouflée par l'artiste sur un support en contreplaqué, constitue l'un des seuls exemples restants de son œuvre où elle utilise cette technique. Si la recherche préliminaire sur l'œuvre a révélé des détails intéressants au sujet de l'artiste, aucune de ces informations ne provenait de publications issues du domaine de la restauration. Cet article entend à présenter aux restaurateurs les motivations, méthodes de travail uniques et matériaux de Ferron ainsi que certains points de vue de l'artiste au sujet de l'art, des artistes et de sa propre œuvre, mettant surtout l'accent sur la première moitié de sa « période parisienne » (1953-1960). Le traitement de Sans titre (1955), qui a été développé selon le résultat de ces recherches, est ensuite décrit. Les facteurs problématiques étaient les décollements importants entre la toile et le contreplaqué, les déformations de la toile en forme de dôme et la présence d'un vernis très jauni. Afin de préserver l'intention et les matériaux de l'artiste, ainsi que les réparations et les retouches qui lui sont propres, tous les éléments d'origine ont été conservés. Des trous ont été percés au revers du contreplaqué pour y injecter un adhésif et éviter d'intervenir sur la face peinte, relativement intacte. La toile déformée a retrouvé une forme plane à l'aide d'une série de traitements d'humidité et de chaleur, le vernis jauni a été retiré et le tableau a été reverni, dévoilant les couleurs vibrantes de la composition.

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Introduction

In October of 2007, a painting by the internationally acclaimed Quebec artist Marcelle Ferron, Untitled (1955) (Figure 1), owned by the Ottawa Art Gallery and destined for an upcoming retrospective at the gallery, was brought to the Canadian Conservation Institute (CCI) for treatment. The painting measured at its maximum 44.2 cm height by 52.5 cm width. It was slightly off-square, painted in oil on canvas and adhered to a plywood auxiliary support. Research into what is known of the artist's working methods and materials, combined with an indepth examination and analysis of the painting, has revealed interesting details about the artist's choices, preparation and use of materials. This paper aims to provide insight into a body of work which is minimally documented in the conservation literature, and will outline Marcelle Ferron's early working methods and materials. The focus will be on her Paris period (1953 to 1966) and in particular the years prior to 1960, during which time the work Untitled (1955) was painted. Information about the artist was found in primary sources, from the artist herself, her close friends and estate documents, and as well in secondary sources: historians of modern and contemporary Canadian art, curators of recent retrospectives of the artist's work, and conservators who have treated paintings by Ferron. The second half of this paper will address the condition and treatment of *Untitled* (1955) carried out between 2008 and 2009.

Marcelle Ferron: The Artist and Her Influences

The Early Years

Marcelle Ferron was born on January 29, 1924 in Louiseville near Trois-Rivieres, Quebec. She was seven years old when her mother died, and the responsibility of care for Marcelle and her four siblings fell to her father, a well-liked notary of repute, good-natured, with strong opinions who freely discussed current events, politics and literature with his children. He moved the family to the countryside in the hope that exposure to the out-of-



Figure 1. Marcelle Ferron, *Untitled* (1955), Before Treatment. Firestone Collection of Canadian Art, The Ottawa Art Gallery; Donated to the City of Ottawa by the Ontario Heritage Foundation. Photo: Carl Bigras, CCI. © Marcelle Ferron Estate/SODRAC (2010).

doors and a liberal upbringing would be beneficial to his children.¹ Sickness, death and the importance of independent thought were all part of Ferron's early life, and instilled in her an urgency to live her life to the fullest. It also laid the ground work for her passionate personality and her characteristic straight-talk.² In 1942, by the age of 18, she convinced her father to let her enter the École des beaux-arts de Québec only to drop out two years later due to dissatisfaction with the conservative curriculum, the teachers' perspectives and their answers to her questions about modern art.3 After leaving the school, she attempted to settle down; she married, had her first daughter, and moved to Montreal where she continued to paint. It was here that she met prominent Quebec artist Paul-Émile Borduas in 1946.⁴ Ferron had been fascinated and intrigued by Borduas' work and had contacted the artist, asking him if he would look at her own paintings. He agreed to this, and the two met for weekly mentoring sessions at his École du meuble office. Recognizing and appreciating her talent and potential, he invited her to join the group of painters he was then leading, the Automatistes.⁵

Marcelle Ferron and the Automatistes

The *Automatisme* movement, formed by a small group of artists with broader implications than just a stylistic school, took shape in the early 1940s under Borduas' guidance. At this time, social and artistic freedom in Quebec was muted by elite bourgeois values and the conservative ideology of the Duplessis government and Catholic Church.^{6,7} The group published the *Refus* global manifesto in 1948, bringing about a shock wave which swept across Quebec's cultural and political scene. To this day, the publication of the Refus global is recognized as a pivotal event in the province's move to modernity.8 Ferron was one of the youngest signatories to this manifesto, and one of the last artists to officially join the group.9 The movement, which included not only painters, but also members of the broader arts community, remained active in the province of Quebec through exhibitions (solo and group) and publications until about 1953, when many members dispersed to seek inspiration abroad.¹⁰ This included Borduas who relocated to New York and then to Paris in 1956, precipitating the dissolution of the collective. The Automatistes, nonetheless, continued to nurture their interrelationships despite the passage of time and the evolution of their respective styles.

The Independent Artist

Marcelle Ferron (**Figure 2**) did not escape this fervor for travel. In 1953 she separated from her husband and set sail for France with her three young daughters.

She settled in the Parisian suburb of Clamart in 1955 working out of a garage converted into a studio adjacent to her house. Initially, Ferron produced small scale work because of her meagre resources. However, through the generosity of a benefactor who was able to provide her with painting materials, from 1954 onward she began creating increasingly large, colourful, luminous and high-impact paintings.¹¹ Most of her works produced throughout the 1940s in Montreal had been



Figure 2. Marcelle Ferron in Paris, 1954. © Marcelle Ferron Estate/SODRAC (2010).

modest in size. They were also fairly restricted in colour range and predominantly composed of earthy and cool dark tones. She was quick to notice, however, that Europeans were impressed by the novelty of vibrant colours and very large formats.¹² Fellow *automatiste* Jean-Paul Riopelle's enormous paintings, his use of space and an exotic colour palette (evocative of North American nature) came as a revolution in style to the French, and were extremely well-received.¹³

Ferron claims to have been more interested, at the time, in opportunities to discover the world through new acquaintances rather than seek out the company of her fellow countrymen.¹⁴ Among her most important encounters were those with Herta Wescher and Michel Blum. Wescher, an art critic who Ferron had met in Paris in 1955 after her first solo exhibition, took the artist under her wing and became a major contributor to the advancement of her international career.^{15,16}

The end of the 1960s marked a turn in Ferron's career. Inspired by stained glass artworks, which she loved at first sight when passing a Parisian gallery, she contacted the artist, Michel Blum, who taught her to work with glass. Ferron devoted the next seven years to this luminous art form and to her new, and favourite, means of diffusion: public art.^{2,17}

This passion for the creation of public art was one of many deciding factors that brought Ferron back to Montreal in 1966. The whole province was boiling with excitement and overflowing with creative opportunities as Montreal was preparing for the 1967 International and Universal Exposition.¹⁸ She returned to painting full time in 1973, her style ever-evolving. She continued to paint, even when sick and confined to her bedroom, until her death in Montreal on November 19, 2001.

Ferron on Her Work, Artists and Art

Marcelle Ferron was known to be a very colourful, outspoken and opinionated woman, and an artist to her core. She agreed with her mentor, Borduas, when he claimed that being an artist was a total commitment and that artworks were just manifestations of this state of being; paintings just happened and were meant to be seen, certainly not to be "kept in a cave for fifty years."19,20 She believed the language of colour was powerful, universal and fast - and that it was also the best way to the public's heart.^{21,22} This is perhaps why abstraction had such a strong appeal for her. She also felt that her personal life did not have much of an impact on her work, claiming that the major influences were rather the place she was from and the materials she used. To Ferron, her paintings did not tell a story, they were strictly about a pictorial language ("langage pictural"), about her relation to space and colour, all heavily rooted in the luxury of the vast spaces in Canada.²³ This sense of space, this vastness, followed her throughout her career, and it defined her style during her fruitful French period. The artist spoke of her stay in Europe as the time when her art came back to its roots.²⁴ She has said that the paintings dating from her last years there (approximately 1960-1966) were her most accomplished.²⁵

Techniques and Working Methods

Pre-1953

At the time Marcelle Ferron met Borduas in 1946, her paintings were of modest scale and depicted figures in graveyard-like environments, all in sombre tones - a far cry from the colourful and bright compositions for which she would be recognized only a few years later. Her mentor encouraged her to abandon the figures and focus on the abstract backgrounds.²² While a part of the *Automatiste* group, Ferron continued to paint small, abstract scenes using cool dark colours and earth tones. She favoured a subtractive or *sgraffito* technique, often creating motifs by scraping away layers of paint, and using small artist boards and Masonite panels as supports. She was already comfortable painting with both brushes and palette knives.

1953-1960: Changes in the Artist's Technique

The year 1953, when she relocated to France, marked an important turning point in Ferron's work. She began using vivid colours, and white also entered her palette, progressively occupying a predominant role as a counterpoint to the bright colours. She was then employing canvas supports, making increasing use of the palette knife, and applying paint in thick multidirectional strokes over the entire surface of the canvas.²⁶ *L'Éros et la joie* (1953) (Figure 3) is perhaps the best example of this transition. In this painting, the artist started to move away from her dark, earthy palette, introducing touches of bright reds and blues dispersed throughout the energetic brown strokes that she combined with her early use of white.²⁷ Her colour palette would become progressively bolder and more vivid, but she would carefully restrict the number of colours used in a single painting so as to offset, but not overpower, the immaculate white negative space.

Having quite limited financial means when she first arrived in Paris, Ferron did what she could to keep painting, whether buying her paints at Adam or Sennelier in Montparnasse, like many artists, or resorting to stealing the much-needed tubes of colour. A remarkable change in fortune came in the guise of a commercial paint manufacturer who, in 1954, gave her considerable stocks of dry pigments. Ferron herself recounted that this man sent her "powders, in large bags: 50 pounds of red, 50 pounds of blue, 50 pounds of green, well, all the colours in the world."²³ She learned how to grind them and mix her own colours. Additions of dry pigments to her premixed paints allowed her to introduce a granular texture to her work during this period ("pour le rugueux," for roughness).¹ Due to this newfound abundance of resources she was able to create larger paintings. The artist admitted that she owed to this man a large part of her success in France.²⁸

1953-1960: Working Methods and Inside the Artist's Studio

Ferron willingly admitted to having quite compulsive working methods, easily painting for five to eight hours without interruption, even while her studio was flooded after a heavy rainstorm, or "writing until numbness took over, sewing until exhaustion."²⁹ She was very reticent about what occurred in her studio – it was a private, intimate place. She would not tolerate distractions, and no one, with the rare exception of a select few, was allowed inside. The artist did, however, open the doors to her Montreal studio for the National Film Board of Canada (NFB) in 1989.¹ All of her stretched paintings were turned facing the wall for the occasion. She was known to let some of her works "sleep" so as not to see them and to then evaluate them afresh when resuming the work. She did not systematically turn around all of her unfinished paintings, however, as she always worked on many canvases simultaneously and enjoyed looking at them and gaining inspiration.³⁰

Because what happened in Ferron's studio stayed in the studio, little detail is known about the artist's working methods. She did reveal that she usually laid out all of her paint tubes on her work table and aligned her containers of dry pigments next to them. Ferron predominantly used linseed oil as a medium, although it has been reported that some of her lighter colours were occasionally ground in poppyseed oil, which is lighter in colour than linseed oil and does not yellow as much upon aging because of its lower photosensitivity.^{12,31}

To create her complex multilayered compositions, Ferron first used large palette knives to lay out her colours on the canvas with rapid spontaneous motions, letting the thick successive layers freely blend together or build up. Once the general theme was set, she proceeded to carefully elaborate her composition, balancing its movement, colours and the positive and negative spaces, using either a knife or brush. The artist always trusted her first instinct, but she never let a painting out of her studio before it satisfied the "very strict formal constraints she had for it."³² Space within the canvas was solely defined by movement and the dynamics between colours and light. The compositions acquired their meaning as each stroke of paint was added, and as the ensemble was sculpted.^{33,34}

Ferron used two types of custom-made palette knives which she referred to as her "brush" and "squeegee" types. The first category included the more traditional knives, with the blade being a continuation of the handle. The artist used these most frequently and had them in all lengths and widths. The squeegees, with a flexible blade centered at a right angle from the end of the handle, were in Ferron's own words reserved for "great moments" and for "rakings".¹ She made greater use of these after 1960, when her paint strokes grew progressively larger and stronger.

Ferron had such great trust in her eye that she could spontaneously destroy or completely paint over the paintings which did not meet her standards. She called such moments "the day of the unforgiving eye" ("la journée de l'oeil impitoyable") and deemed them necessary to avoid being complacent and unsure of one's eye; without these moments her paintings were pretty, she said, but that did not make them artworks.¹ Paquerette Villeneuve, Ferron's friend, stated: "During the heroic time of Clamart ... often have I seen her ... in her garage, converted into a studio, vigorously working on an artwork in progress when it was not, albeit our objections, to make it vanish behind the next mysterious evolution."³⁵ These highly interventive moments are key to understanding Ferron's technique.

Ferron very frequently retouched her paintings to varying degrees - to improve upon them, to freshen them, to restore them. The artist explained this process by saying:

Sometimes you think a painting is finished; but the following day you look at it and you say "My God, what a piece of garbage! That's not it, not it at all!" But on what basis do you say that? On a sense of continuity that you don't know, not really. So then you either retouch it or you throw it in the trash. That's it, you're the master after all. And sometimes you can be wrong too. ... We are not always lucid regarding what we do, especially in a period of transition in our work. ... Sometimes it's good, sometimes it's not. When it's not good I rip it up, that's all. ... But seeing the price of canvas and stretchers these days, you recuperate them.²²

She was especially uncompromising in the case of her whites: they had to be immaculate. It was a common practice for Ferron to apply a fresh coat of white paint over dirty or yellowed white areas, repeating the operation as often as required as long as the paintings were in her possession. She would even occasionally obliterate her signature while retouching, replacing it in the process, either in the same position or elsewhere on the canvas.³⁶⁻³⁸ She also routinely masked losses, drying cracks and other damages herself by locally and rather freely brushing paint over them. This practice is most noticeable where she has made repairs along the edges of some of her works after fragments of fragile *impasto* had broken off or cracked as she was handling the painted and stretched canvas or cutting off the tacking margins.³⁶⁻³⁹

Marcelle Ferron was not specifically concerned with the nature of the coatings on her paintings, as long as her works looked good. She would even revarnish certain paintings before each show, when judged appropriate, over what we can imagine were not necessarily clean surfaces.³⁶

Untitled (1955): Technique and Materials

The Technique

The painting is shown in **Figure 1** as it appeared before treatment at CCI with the painted canvas adhered, by the artist, to a plywood backing. Based on existing visual evidence, Ferron likely prepared the painting in the following manner. A canvas was first stretched and tacked onto a temporary auxiliary support (stretcher or strainer) and was prepared with a ground layer and painted. The artist laid the colours in thick and rapid successive applications, wet on wet, layer upon layer, using palette knives. This painting may have been created on a recycled painted canvas, or its composition changed, as colours foreign to the final painting, such as bright orange and pink, could be seen through losses in the *impasto* close to the edges. However, an underlying



Figure 3. Marcelle Ferron, *L'Éros et la joie*, (1953), Oil on canvas, dimensions 38.3 x 46 cm, Collection: Musée national des beaux-arts du Québec, accession # 1992.120. Photo: MNBAQ, Patrick Altman © Marcelle Ferron Estate/SODRAC (2010).

composition was not visible in the X-radiographs taken prior to treatment. The colours chosen for this painting were predominantly blue, magenta, purple, green and bright white. While many of the colours were applied as thick sweeps of *impasto*, some of the paint was worked into the underlying *impasto* in a very thin, fine layer, providing a delicacy that offsets the heavy *impasto*.



Figure 4. X-radiograph composite of *Untitled* (1955), BT. Photo: Jeremy Powel and Carl Bigras, CCI.

An X-radiograph of this painting (Figure 4) shows that the original support had a 4.5 cm-wide vertical cross-bar. There is a clearly delineated vertical band where the initial ground application and paint were thinner, this being an area where the artist's knife would have met resistance. Although the X-radiograph showed faint stretcher garlands around the perimeter, there is no distinct outline of the stretcher's outer members. There are several possible reasons for the absence of stretcher bar marks in this region, one of which is that the original size of the painting may have been slightly larger than the current presentation, and the edges cropped back. Another possibility is that greater pressure was applied to the centre of the canvas when forming full knife strokes and the paint there is therefore thinner than it is along the perimeter where the hand generally tends to lift away from the canvas before going over the edge.

After having laid out the initial scheme of the painting, Ferron cut the canvas to fit its intended auxiliary support, a five-ply plywood board (**Figure 5**), adhering the painted canvas to the board using an epoxy adhesive. This epoxy

would have been a quick-set, as the artist would not have wished to risk staining and compromising canvas and paint layers with infusion of an adhesive layer. Ferron applied the epoxy to the plywood face, likely rapidly and possibly unevenly, missing some areas and layering others in different thicknesses. The painting would have been laid down onto the epoxy adhesive. There is no sure way to tell whether the canvas was also coated with epoxy without removing the canvas from the plywood.



Figure 5. Untitled (1955), BT. Verso showing the plywood auxiliary support. Photo: Carl Bigras, CCI.



Figure 6. Untitled (1955), BT detail, bottom left corner, raking light. Rough fill material and artist brushapplication of purple and white paint over cut edges. Photo: Carl Bigras, CCI. © Marcelle Ferron Estate/SODRAC (2010).

However, given the large amount of delamination, it is probable that only the one surface was given an epoxy coating. Ferron would not have applied weights to the surface of the painting to ensure good contact given that the paint was not fully dried and many areas of impasto would have been compromised. In effect, the painting was laid above the epoxied plywood and lightly pressed (possibly by hand) into the uneven quick-set epoxy. The quick set ensured that only short-term pressure would be required to complete the adhesion process. Since the canvas extends precisely to the edges of the board, it was probably trimmed again after it had been mounted.



Figure 7. *Untitled* (1955), BT detail, raking light. Artist brush-applied retouch to brighten a white area. Photo: Carl Bigras, CCI.

Varnish

damages to the paint and ground layers incurred from the cropping of the canvas along the edges of the painting. These initial repairs, and possibly subsequent repairs by the artist, can be seen in three of the four corners, where a textured material forms the support for the missing white paint and for the other paint colours (Figure 6). Ferron also reworked and retouched the painting at some time, using a brush instead of knives. Lighter colours were added to the composition, and losses and cracks were painted over (Figure 7). Examination under ultraviolet light and under magnification revealed three retouching campaigns by the artist, in the whites. At least one of these occurred after the painting was coated by the artist with a dammar varnish (Figure 8).

At this point, Ferron likely repaired

The Materials

The varnish, original paint, retouching paint, fill material and the adhesive used to mount the canvas onto the plywood support were sampled and analysed by CCI's Analytical Research Laboratory.^{40,41}

The artist-applied varnish, which had become a dark amber colour, was identified using gas chromatography-mass spectrometry (GC-MS) as dammar resin with an addition of beeswax.⁴⁰ Four circular brown surface accretions in the upper



Figure 8. Untitled (1955), BT detail. Ultraviolet light reveals three campaigns of white retouching to a paint loss and part of a crack. Under normal light this appears as one white retouch. Photo: Carl Bigras, CCI.

right corner were identified as gum (possibly gum arabic) by Fourier transform infrared (FTIR) spectroscopy.⁴¹

Paint

Ferron is known to have used both commercially produced and hand ground paints. Paint samples from initial knife applications and from retouchings were analyzed by GC-MS with the goal of determining the paint medium. The medium was of particular interest as there is some question as to which drying oil - linseed or poppyseed – was generally used by the artist.¹² The medium in the original white paint was identified as linseed oil. A very high level of oleic acid which was present would result in poor drying and poor or incomplete polymerization; this 50-year old painting has not yet fully dried.⁴⁰ The medium in the original cobalt blue paint was identified as either a mixture of linseed and poppy seed oils, or as safflower oil; the palmitic acid to stearic acid ratio (P/S) was too high for linseed oil and too low for poppyseed oil alone. This is an interesting observation, as poppyseed oil was thought to have been used by Ferron with the lighter colours rather than the darker ones. Analysis of the medium of the original dark magenta paint (pigment: alizarin PR83) revealed yet another binder mixture: castor and linseed oils. This sample also showed the same evidence of slow drying. Paint from one white retouching campaign was analyzed and found to comprise linseed oil with a high oleic acid content. Like the original white, it is likely a slow drier. The sample from the purple retouching paint applied over the fill at the lower left corner indicated linseed oil with a pine resin component. All of these results suggest that Ferron worked in a very organic and spontaneous manner, mixing each colour in a unique way and utilizing a number of different materials.

Fill Material

One sample of the fill material from the bottom edge was analyzed using FTIR spectroscopy. The binder was identified as linseed oil and this was the only sample analyzed from this painting that indicated a normal drying based on the amount of oleic acid. The FTIR analysis confirmed the presence of titanium white, calcium sulphate, barium sulphate and hydromagnesite.



Figure 9. Untitled (1955), BT detail, top left corner. Discoloured coating and areas of pooling in wrinkles and creases. Photo: Carl Bigras, CCI.

This fill material was in fact a very thick, pigment-rich paint.⁴⁰

Canvas

No instrumental methods of analysis were used to identify the canvas, but examination through a 1 cm² paint loss at the lower right corner suggested that it is a heavy-weight linen, of a plain, tight weave.

Adhesive

The adhesive used to mount the canvas onto the plywood support was identified as an epoxy resin by FTIR analysis.⁴¹ Epoxy adhesive is also known to have been used for this purpose by Ferron in the case of other paintings dating from the late 1940s to mid-1950s.³⁸

Untitled (1955): Condition and Treatment

The Condition

The painting had been in long-term storage as there was a concern that its physical condition could be further compromised



Figure 10. Untitled (1955), BT detail, top right corner. Deposits of discoloured gum arabic. Photo: Carl Bigras, CCI.



Figure 11. Untitled (1955), BT raking light. Surface appears "wavy" due to the many rounded deformations of the canvas support. Photo: Carl Bigras, CCI.



Figure 12. Untitled (1955), BT, top edge. Side-view of the plywood/canvas interface showing the epoxy adhesive, gaps and canvas deformations. Note the white paint along the edge indicating artist reworking after the painting was adhered to the plywood. Photo: Carl Bigras, CCI.



Figure 13. *Untitled* (1955), BT detail of a horizontal crack, raking light. Note the slightly overlapping edges, paint losses and white artist-applied retouches. This image is an enlarged view of the area shown in **Figure 8**. Photo: Carl Bigras, CCI.

by display. Its appearance was also sufficiently removed from the artist's intention to cause a disservice to both the artist and the work of art. The painting had a highly yellowed surface coating, significant and unsightly deformations of the canvas, small losses, and long horizontal cracks. The plywood support was still in very good condition, with all edges painted white, and paint smudges, oil stains, and coloured imprints scattered across its *verso*, as is typical for Ferron's auxiliary supports (see **Figure 5**).

Surface Coating

The degraded surface coating was of irregular thickness: very thin and translucent in some areas, while quite thick and opaque in others (**Figure 9**). Where it was applied thickly or had pooled, especially in deep wrinkles, creases and other depressions in the paint, the coating obscured the rich bright colours. All evidence indicated an original and artistapplied varnish, as surface dirt and some of the small deposits of epoxy resin and gum arabic (likely accidental spatters by the artist) were located above the varnish

layer. Accretions contributed to the surface discoloration, having become more visible as they aged (Figure 10).

Delamination and Surface Deformations

The presence of very noticeable dome-like deformations of the canvas gave the painting a "wavy" appearance (**Figures 11** and



Figure 14. *Untitled* (1955), BT, superimposed with the delamination map. Continuous lines indicate areas of delamination associated with a canvas deformation, dotted lines indicate delamination without deformation. Photo: Carl Bigras, CCI.

12). These deformations varied in size, ranging from 3 to 9 cm in diameter and 0.1 to 0.5 cm in height. Generally, the edges of the canvas were fairly well secured to the auxiliary support, and the delaminations and subsequent swelling of the canvas had taken place inside the borders of the work. Some of the raised areas were hard to the touch, this being the result of the heavy paint layers and possibly a thin layer of epoxy adhesive hardened on the reverse side of the canvas. The extensive delamination between the canvas and plywood was found, by light tapping of the surface, to cover about half of the total area of the painting. Given the irregular configuration of extruded adhesive visible along the top edge of the painting between the canvas and plywood support (Figure 12), the adhesive was applied quickly and irregularly. This observation has also been made by others familiar with similarly mounted paintings by Ferron.³⁸ Not only would an irregular application of epoxy be conducive to adhesive failure, but adhesive failure may have been exacerbated by undulations or quilting of the painted canvas that would have developed prior to the canvas application to the plywood. These areas would not have adhered to the plywood backing, and would subsequently have been free to move over time, forming the large "bubbles" of painted canvas visible on the surface of the painting.

Losses, Cracks and Retouches

The fact that the paint layers may not have been fully cured does not seem to have prevented some cracking and loss from taking place before the painting was adhered to the plywood backing. It was assumed that the cracks had begun forming before adhesion of the canvas to the plywood, as their locations were not consistently related to areas of delamination. A number of losses were noted at or close to all the edges (seen as discrete black areas in the radiograph, Figure 4). Often of significant size (6 to 10 cm^2 on average), they had been repaired by the artist using heavy, pigment-rich inlaid paint and then retouched. They probably occurred when the artist cropped the painted canvas before adhering it to the plywood board. Only minor losses were evident within the painting field and these were restricted to edges of impasto. There were two fairly significant cracks (7 and 11 cm long) through the paint and ground layers, with slightly overlapped edges; these ran horizontally across the painting (Figure 13). Retouches were carried out by the artist to those areas of white paint that she deemed in need of highlighting or brightening (see Figures 7 and 8).

Areas of delamination, as well as all accretions, losses, cracks and deformations were carefully mapped out on a Mylar overlay, which will hereafter be referred to as the delamination map (**Figure 14**).

The Treatment

The goals in designing a treatment for this painting were to stabilize the artwork and to improve its general appearance, returning it to a state close to that of the original intention of the artist. This was done by removing discoloured materials from the surface of the painting, reducing or eliminating canvas deformations, and readhering the delaminated canvas to the plywood. It was clearly important to retain the plywood backing, not only because it was part of the artist's intention for the presentation of the painting, but also because this is one of the rare remaining examples of this technique by Ferron.

Initial Steps

Initial testing revealed that the varnish was soluble in aromatics and partially soluble in isopropanol. White, ultramarine blue, light and dark green paints were sensitive to more polar solvents, but were unaffected by short exposures to a mixture of xylene and isopropanol (under 10 seconds) or to mineral spirits. Magenta and cobalt blue paints were more sensitive to aromatics, but no pigment was picked up with a swab after short exposures to a solution of xylene diluted with mineral spirits. All topmost thin paint applications (blue, turquoise, purple/lilac and dark green) as well as the signature, were highly sensitive and soluble in aromatics, but were undisturbed by mineral spirits. This is a cautionary note to conservators treating works by this artist – many of her paints are solvent-sensitive. It is necessary to test each colour separately during surface cleaning, varnish removal and consolidation where solvents may be employed.

In order to minimize the handling of the painting during the surface consolidation and cleaning phases, the painting was set down on a padded, Mylar-covered Lazy Susan that allowed it to be rotated in plane. All sections of the painting could then be easily oriented toward the conservator during the treatment.

Construction of a Handling Frame

As conceived, the treatment was going to require much handling of the painting, especially turning it frequently face up and face down. In order to secure the painting and protect the surface during the treatment process, a light handling frame that would provide access to both the recto and verso of the painting was constructed out of Coroplast (Figures 15 and 16). The top and bottom windows of 1-cm thick Coroplast fitted under and over the plywood and canvas with an overlap of 1 cm on both front and back surfaces. The rabbet was padded with closed-cell insulation foam tape. The spacer between front and back windows was made up of a composite of two layers of 1-cm thick sections of Coroplast, padded and butted up against the perimeter of the plywood. The three-layer-sandwich frame was assembled using eight 2¹/₄ inch (6 cm) bolts. The long bolts also served as legs to elevate the front and back of the frame from the work bench. To finish the frame, the unpadded interior edges were covered in cloth tape, and all outside edges were lined with blotter paper and sealed with white framer's tape to eliminate any sharp edges.

Paint Consolidation

Before placing the painting in the handling frame, areas where paint had delaminated and lifted from an underlying layer were consolidated through the introduction of BEVA D-8. This adhesive is an aqueous, non-ionic dispersion consisting mainly

of ethylene vinyl acetate. Despite a high viscosity it has good flow properties and maintains long-term flexibility.⁴² It also provides strong adhesion which can counteract delamination stresses in a paint system. It is non-toxic, stable, and can be heat reactivated if necessary. Solvent-based adhesives were rejected due to paint sensitivies. Traditional water-based glues were avoided (e.g., rabbit skin glue) due to several factors. The most important was the possibility that the more fluid glues could have penetrated through to the canvas and then settled out between the canvas and plywood layer where their presence could cause problems (through penetration into plywood not protected by epoxy and/or subsequent contraction). The use of BEVA D-8 aqueous dispersion that, once set, cannot be reactivated by humidity was also attractive, as treatment of the delamination between canvas and plywood was to be carried out using this adhesive and it was important that the second application not disturb the first.

Some of the areas of paint delamination (paint from paint or paint from ground) were curled at the edges. Moisture associated with the adhesive was used to assist in the relaxation of the many hardened areas of lifting paint. Moisture was delivered both by the adhesive and by exposure to humidified Gore-Tex laid out above the paint layers. Where possible, relaxation was assisted by warming the paint using a micro-spatula set between 75 and 85°C. Most areas of lifting were set down using this procedure. In one or two areas, however, where the paint layers were especially heavy and hardened into cleavage, only a partial return to the original planar configuration was possible.

Surface Cleaning

Following consolidation, the surface was cleaned using an aqueous solution prepared according to Chris Stavroudis' Modular Cleaning Program.⁴³A 2:1:2 solution of distilled water, pH 7.5 Tris/HCl buffer concentrate and pH 7.5 citrate/NaOH chelator concentrate, worked slightly better than saliva in this case. The brown stains (gum arabic) in the upper right corner were easily removed with distilled water.

Developing a Treatment Plan for Canvas Flattening and Readhesion

All subsequent treatment steps were carried out with the painting secured in its handling frame. The most challenging condition presented by this painting was the extensive delamination between canvas and plywood. The first step in returning the canvas to plane involved determining acceptable methods for relaxing and flattening areas of deformation. Testing indicated that the paint, canvas, and possibly the layer of epoxy on the canvas *verso* would respond to a limited amount of heat and moisture. A moisture/heat treatment was therefore adopted, while being mindful of the risk of causing damage and changes to the paint by excesses of the former or latter.

A method for readhering the canvas to the board then had to be determined. Since epoxy resin adhesive cannot be reactivated, a new adhesive would have to be introduced into the cavities



Figure 15. Handling frame component diagram, showing all parts in their layered structure before assembling.



Figure 16. Handling frame construction diagram, showing a cross-section of the layered structure and assembly. The Coroplast layers were spaced for the purpose of clarity in this diagram.



Figure 17. The delamination map flipped over and laid on the back of the painting. Optimal hole location markings, according to delamination zones and predicted adhesive flow patterns, were transferred onto the plywood with a graphite pencil.



Figure 18. Drilling into the back of the plywood board. The painting is secured in its handling frame and the drill bit is set at a length of 0.9 cm, the thickness of the board.



Figure 19. Heating the previously humidified paint and canvas layers. The exposed area receives heat for no more than three minutes at once and the heat treatment is repeated until the paint and canvas are flexible and can be brought in contact with the plywood with slight finger pressure.



Figure 20. The delamination map is overlaid on the recto of the painting. The injection template, a circle marked at 0.4 cc, is placed over the various marked hole locations (*) to estimate the quantity of adhesive to inject in each hole to re-adhere that area of delamination.

produced by the delaminated canvas. The challenge was to establish first which adhesive to use and then how to introduce it into this space. As there were multiple areas of delamination, and very few entrance points (losses) on the face of the painting, it was decided that the least destructive approach would be to inject the adhesive through the plywood from the *verso* through drilled holes. In order to make the smallest holes possible, drilling and adhesive delivery tests were conducted. The drilling was to be performed before the canvas was flattened, in order to take advantage of the clearance between canvas and plywood.

The choice of adhesive was based on a number of factors. Because it would be injected into a closed space, it was decided not to use a solvent-based adhesive in the interface and risk the effects of solvent vapour migration through the paint layer. The best choice would be a water-based adhesive with a high viscosity. A high viscosity adhesive would have a quick tack and



Figure 21. Untitled (1955) verso, after treatment. Photo: Mylène Choquette, CCI.



Figure 22. Untitled (1955), details, before (left) and after (right) varnish removal. The 100% solvent gel mixture was used throughout this area, except on the blue, where the use of 50% was necessary. Thicker varnish layers around the contour of the blue impasto were removed mechanically.

would have controllable flow properties once in the cavity. After testing, BEVA D-8 Dispersion was selected, in part for its high solids content (55%), and also for its adhesive strength and flexibility.⁴² Undiluted BEVA D-8 could also be injected through a needle fine enough to fit through a 1 mm diameter hole, the smallest hole through which a high viscosity adhesive could be successfully delivered.

Drilling

Drilling through the back of the board to access the voids between the canvas and plywood presented several challenges, not the least of which was to leave the canvas undisturbed in drill sites. The size of the hole needed to be small enough so the canvas would not conform to the outlines of the hole when later



Figure 23. Marcelle Ferron, *Untitled* (1955), After Treatment. Firestone Collection of Canadian Art, The Ottawa Art Gallery; Donated to the City of Ottawa by the Ontario Heritage Foundation. Photo: Mylène Choquette, CCI. ©Marcelle Ferron Estate/SODRAC (Montreal) (2010).

pressed onto the board during the moisture/heat treatment. A 0.965 mm diameter drill bit was selected to produce the holes. During the drilling operation, holes were drilled through the plywood one area at a time, as situated by the Mylar overlay delamination map. Optimal adhesive entrance points were indicated on the map, and these markings were transferred to the back of the plywood with a pencil (Figure 17). The length of the drill bit was set to exactly 0.9 cm, which was the thickness of the plywood board, so that there was no chance of drilling too deeply and piercing the canvas (Figure 18). It was also necessary to avoid creating a burr at the exit hole or to push wood dust between the canvas and the plywood, effectively trapping debris. Much testing with different drill bits was undertaken in order to circumvent these problems. In the end, it was the process rather than the tool that made the difference. In order to avoid pushing wood dust out the hole at the canvas/board interface, the drill was pulled out of the hole two or three times while drilling, before boring the exit hole, taking almost all of the dust out the back and reducing the burr to a minimum. To verify that the

plywood had been completely drilled through, a clean and blunted syringe needle was introduced into the hole. With the finger tips of one hand on the *recto* of the canvas, and the other hand gently pushing the needle from the back, a slight tap felt on the canvas side would confirm that the hole was drilled through to the air pocket. Two or more holes were drilled for each area of delamination, to allow for better distribution of the adhesive.

Canvas Flattening

The entire surface of the painting was covered with layered bands of blotting paper, with the exception of the area to be treated. Dampened Gore-Tex was applied to the area of distortion and then covered with Mylar. Both membranes were removed after 5 to 7 minutes and the area heated with an infrared light bulb placed overhead at approximately 30 cm distance in a series of 2- to 3-minute exposures (Figure 19).⁴⁴ The temperature of the exposed area and its covered surroundings was regularly checked by touch to avoid overheating and by using paper temperature strips. Temperatures registered a maximum of 77°C. The combination of moisture and heat was sufficient to gradually relax most of the deformations. Once the area was flexible enough to be flattened with slight finger pressure, it was allowed to cool down under silicon-release Mylar, using soft weights to conform to any thickly applied paint passages, above which heavier block weights were placed. In most cases this treatment was repeated several times, according to the size of the deformed area and the flexibility of the paint and canvas until the canvas was as flat as possible. This treatment did not cause any harm to the paint, which was still quite flexible after more than 50 years.

Although many of the deformations were eliminated, several of the most pronounced canvas "bubbles" could not be brought entirely back to the plywood surface. Their reluctance to conform may have been due to a layer of hardened epoxy resin on the back of the canvas. Fortunately, these deformations were significantly reduced and their effect was muted by Ferron's abstract motif and vibrant colours.

Adhesive Injection and Canvas Re-adhesion

To estimate how much adhesive would have to be introduced through each hole in order to cover a particular size of delamination, testing was carried out. A template was drawn up to delineate the area covered by 0.4 cc of adhesive lightly pressed under Mylar on a plywood mock-up.45 Placing the template over each drilling location on the delamination map would help to approximate the quantity of BEVA D-8 to use (Figure 20). With the painting placed plywood side up on the work table, the adhesive was injected in a single motion, the syringe needle's tip sanded to a low angle. Enough adhesive was injected to be visible in the hole when slight pressure was applied from the *recto*. Once the adhesive had been introduced, a small piece of soft microcrystalline wax (X145A) was used to superficially seal the hole and prevent the adhesive from escaping from the injection site before turning the painting over and working from the paint side. Light finger pressure was

applied through silicone-release Mylar to assist in the distribution of adhesive between canvas and plywood. The movement of the adhesive in the interface could be felt and the readhered area determined. The presence of a layer of moisture (from the adhesive) behind the canvas combined with additional heating from an IR lamp during this process helped to further relax the paint and canvas layers back to the plywood. Once no more movement of adhesive could be felt, the painting, in the handling frame, was turned over and the wax plug removed to speed drying. Face up again, the treated zone was left under weights for about 15 hours. This sequence was repeated for each drilled hole, working one hole at a time, although up to four holes in one area could be done in one day and left under weight overnight. Once this adhesive treatment was complete, all of the many drill holes were sealed with Multiwax W-445. This is a white, high molecular weight microcrystalline petroleum wax with excellent resistance to ultraviolet (UV) and colour stability. It has a high melting point (76-80°C), is hard, flexible and has excellent adhesive properties. This material can be excavated and removed from the drill holes, if required. The appearance of the plywood back remained virtually unchanged, and the drill holes were only visible upon close inspection (Figure 21).

Varnish Removal, Infilling, Inpainting and Revarnishing

The decision was made to remove the discoloured coating, an original dammar varnish with traces of beeswax. The coating had marred the surface of the work and the artist herself was known to have been open to the removal and replacement of her surface coatings when this was required.³⁶ Given the highly textured surface of the painting and the varying sensitivities of the paints, solvent gels were used to gain better control over the varnish removal process. A 4:1 xylene/isopropanol gel was most effective, although some of the colours demonstrated sensitivity to this. In order to address these areas, a second gel was mixed to obtain a 50% dilution of the first gel in mineral spirits.⁴⁶ The gel was wiped off with a dry cotton swab and the area rinsed with a 4:1 mixture of mineral spirits and isopropanol. Thicker varnish, located in wrinkles, creases and air bubble holes, that was either difficult to access or to dissolve with the solvent gels, was mechanically removed with fine pointed tweezers and the tips of bamboo skewers. Figure 22 shows details of the painted surface before and after varnish removal. A few thin areas of the original coating were left untouched as they were underneath highly soluble retouches applied by the artist. Where the yellowed varnish showed through these translucent retouches, the discoloration was broken up by the application of small dots of watercolour to restore visual continuity.

Infills were applied to areas of paint loss. The infills consisted of synthetic white wax (W445) combined with titanium white pigment. This could be softened and built up in areas of loss, then sculpted into shapes duplicating missing *impasto*. Inpainting was carried out using Winsor & Newton watercolours. A surface coating of UVS Finishing Gloss Varnish was sprayed onto the paint surface, saturating the colours and bringing out the extraordinary three-dimensionality of Ferron's painted surface. UVS Varnish, based on Regalrez 1094 resin, has a UV absorber

and stabilizer, will remain colourless, and is reversible in lowaromatic solvents. Its behaviour (good levelling and colour saturation) mimics that of dammar or mastic varnishes, the former originally used by the artist for this painting. UVS Varnish responded to the required criteria: the sensitivity of the paints used by Ferron to anything but low-aromatic solvents, the probable gloss imparted by the original dammar, and the need to duplicate this varnish with a protective coat that will not need to be removed frequently, or with strong solvents. **Figure 23** shows the painting's appearance, post treatment.

Conclusion

The research carried out at the onset of this project brought to light the many subtleties that have to be taken into consideration in order to preserve, as faithfully as possible, the artist's intent. As always, understanding artists, their techniques and materials, as well as their intentions and aspirations for their works is essential in designing and implementing a treatment plan. This is especially true in the case of the paintings by Marcelle Ferron.

In the painting Untitled (1955), information obtained from primary and secondary sources, combined with an examination of the painting and an analysis of the artist's materials, provided critical information about the painting and Ferron's work. This project presented the opportunity to collate most of this information into a single publication and as a result, it is hoped that this paper will be useful to other conservators who may find themselves faced with the conservation/restoration of a painting by this artist. For instance, it is important to know that Ferron chose to mount some of her early, small format works onto plywood supports, that she used paints with different binding media on single paintings, that she mixed finely and coarsely ground pigments in her own paints, that these paints contain blends of oils, and that the drying rates of her paints can be excessively long. It is also important to know that Ferron retouched most of the works that she created while in Paris between 1953 and 1960, that some of them are known to have been signed again by the artist after an early signature had been covered by retouches, and that she varnished some of her paintings more than once in order to maintain the original freshness of their surfaces.

Each painting is, of course, unique, and presents its own challenges. What worked for the painting discussed in this paper may not be the optimal treatment for another of her artworks. The treatment carried out on *Untitled* (1955) was successful in that all goals were met. The deformations in the canvas were not expected to be reduced as significantly as they were, and although the prospect of drilling through the plywood board was difficult to assimilate at first, the procedure which was developed proved to be very simple and effective. With *Untitled* (1955) going back up on the gallery wall after more than ten years in storage, it is hoped that the work and career of this pioneer artist continue to grow in recognition, to spark interest and to inspire.

In early September 2000, just over one year before her death, Marcelle Ferron was feeling well enough to take a short

leave from her bed rest one day to go through her retrospective exhibit at the Musée d'art contemporain de Montréal. Unable to make it to the show's opening, she took a quiet morning wheelchair tour before the museum doors opened, two days before the end of the exhibition. Looking at all her paintings, fragile and visibly moved, she suddenly stopped and said: "This one. I would add a stroke of red to this one. You see, right there."^{47,48}

Acknowledgements

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Materials

Modular Cleaning Program Aqueous Solution Recipes

A 2:1:2 solution of distilled water, pH 7.5 Tris/HCl buffer concentrate and pH 7.5 citrate/NaOH chelator concentrate was used for this treatment. Suppliers are listed further below.

pH 7.5 Tris/HCL buffer concentrate: 3.03 g Tris base 17.8 mL of 10% HCl (adjust pH) 100mL distilled water

pH 7.5 citrate/NaOH chelator concentrate:

4.8 g citric acid27.6 mL of 10% NaOH (adjust pH)100 mL distilled water

Solvent Gels Recipes

Both gels were used according to the sensitivities of each colour area. Suppliers are listed further below.

4:1 xylene/isopropanol gel (100% gel): 80 mL xylene 20 mL isopropanol 2 g Carbopol Resin E22 10 g Armeen 2C 1 mL distilled water

5:4:1 VanSol 715/xylene/isopropanol gel (50% gel):
50 mL VanSol 715 (odourless mineral spirits)
40 mL xylene
10 mL isopropanol
2 g Carbopol Resin E22
10 g Armeen 2C
1 mL distilled water

Suppliers

Armeen 2C (surfactant): Akzo Nobel Chemicals Ltd, 1 City Centre Drive, Suite 318, Mississauga, ON, L5B 1M2 Phone: (905) 273-5959 or 1-800-489-9124 Fax: (905) 273-7339 Website: www.surface.akzonobel.com

BEVA D-8 Dispersion (ethylene vinyl acetate): Restorart Inc., 23 Morrow Ave., Toronto, ON, M6R 2H9 Phone: (416) 539-8069 Fax: (416) 532-6829

Carbopol Resin EZ2 (thickening polymer): Talas, 330 Morgan Ave., Brooklyn, NY 11211, U.S.A. Phone: (212) 219-0770 Fax: (212) 219-0735 Website: www.talasonline.com

Climaloc CF12011 or CF12012 closed-cell foam tape: RCR International Inc., Local hardware stores

Coroplast (corrugated polypropylene copolymer sheeting): Plastics suppliers

Filmoplast SH cloth tape: Talas, as above (see Carbopol)

Framer's Tape II (white, 1 in. or 2.54 cm wide): Art supply stores

Gore-Tex moisture-permeable membrane:

Woolfitt's, 1153 Queen St. West, Toronto, ON, M6J 1J4, Phone: (416) 536-7878 or 1-800-490-3567, Fax: (416) 536-4322 Sympatex is now sold as a replacement for Gore-Tex. One Canadian supplier is: Preservation Supply Services, 427 Ashley Street, Coquitlam, BC, Canada V3K 4B2 Phone: (778) 668-4894 Fax: (604) 936-3313 Email: info@preservationsupplyservices.com

Microcrystalline Wax X145A: Witco Canada Inc., 565 Coronation Drive, Scarborough, ON, Canada M1E 2K3 Phone: (416) 284-1661 or 1-800-363-0496 Fax: (416) 284-4316

Multiwax W-445: Talas, as above (see Carbopol)

Winsor & Newton watercolours: Art supply stores

UVS Finishing Gloss Varnish: Available in Canada through Conservator's Products Canada, 23 Morrow Avenue, Toronto, ON, M6R 2H9 Phone: (416) 539-8069 Fax: (416) 532-6829 Email: laszlo@restorart.com

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- 41. Moffatt, E., "Analysis of Samples from an Untitled 1955 Painting by Marcelle Ferron," *Canadian Conservation Institute Analytical Report,* ARL 4558, April 21, 2008. Unpublished report.
- 42. Conservator's Products Company, "Instructions for use of Beva D-8 Dispersion", in: *Talas Online*, http://talasonline.com/photos/instructions/beva_d8_instructions.pdf>. Accessed July 2008.
- 43. Stavroudis, C. and R. Wolbers, "New Methods of Cleaning Painted and Decorative Surfaces: Including: The Modular Cleaning Program: A Systemic Approach to Cleaning Artworks," *Canadian Association for Conservation of Cultural Property* in collaboration with the *Canadian Conservation Institute*, Manual for the 34th Annual CAC Conference Workshop, Montreal, QC, 2-5 June 2008. Unpublished manual.

See the two aqueous solution recipes under the *Materials* section. An introduction to the Modular Cleaning Program is available at http://home.ix.netcom.com/~modular cleaning program/>. Accessed April 2009.

- 44. Areas of magenta and cobalt blue paints were only exposed to moisture through Gore-Tex for one minute at most since longer exposures to water vapour caused slight cleavage between the paint and varnish during tests. When the varnish was later removed from the affected test areas, the underlying paint showed no sign of change.
- 45. The quantity of 0.4 mL was chosen as a reference because a 3 cc syringe with 0.2 cc graduations was selected and the spread size of 2 graduations worth of adhesive would make it quick and easy to estimate and adjust the quantity of adhesive to inject in a determined area.
- 46. See the two solvent gel recipes under the *Materials* section.
- 47. *Marcelle Ferron: une rétrospective*, Retrospective exhibit at the Musée d'art contemporain de Montréal, June 26 to September 8, 2000 (Réal Lussier, curator).
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