

CHAPEL OF GRACE

Reflection Studios Restoration

by Melissa Barclay

When Charles J. Connick designed the Chapel of Grace windows at Grace Cathedral, San Francisco, he naturally turned to Sainte-Chapelle, Paris, for inspiration. That jewel box of Gothic architecture is a magnificent palace chapel built in 1246-48 by King Louis IX (St. Louis) to house relics of the Passion of Christ. Indeed, the chapel was intended as a giant reliquary to house the precious relics of medieval Christendom. From the time of its construction, Sainte-Chapelle's stained glass was emulated in numerous churches and cathedrals. During a stained glass revival following the French Revolution, once again glaziers and artists turned to Sainte-Chapelle.

Charles J. Connick wrote, "Today most expressions that announce glorious color in stained glass are probably related to Sainte-Chapelle and to Renaissance windows." In 1910, a visit to Sainte-Chapelle influenced his stained glass career.

By Easter 1930, when the Chapel of Grace windows were installed, Connick was at his peak. The Chapel of Grace faces California Street on the site of the former entrance stairway and front lawn of William H. Crocker's mansion, which was destroyed in San Francisco's 1906 earthquake and fire. It was the first unit of Grace Cathedral, completed in 1930. The Crockers donated the building site, and Mrs. William Crocker was the donor for Chapel of Grace's stained glass. Connick chose themes for the windows in consultation with Cathedral Architect Lewis Hobart, Building Committee Chairman Rev. Dr. Walter Cambridge, Mrs. Crocker, and Dean J. Wilmer Gresham.

In addition to the Chapel of Grace windows, the Cathedral has 33 Connick windows in the apse and nave, as well as



Grace Cathedral Chapel Nave.

Photograph by G. Harrison Conroy, Grace Cathedral Archives.

35 others (named windows, which include pairs with rosettes, rose/lancet groups, etc.) by Willet, Loire, Adams and others.

Reflection Studios, Emeryville (just across the Bay Bridge), is midway

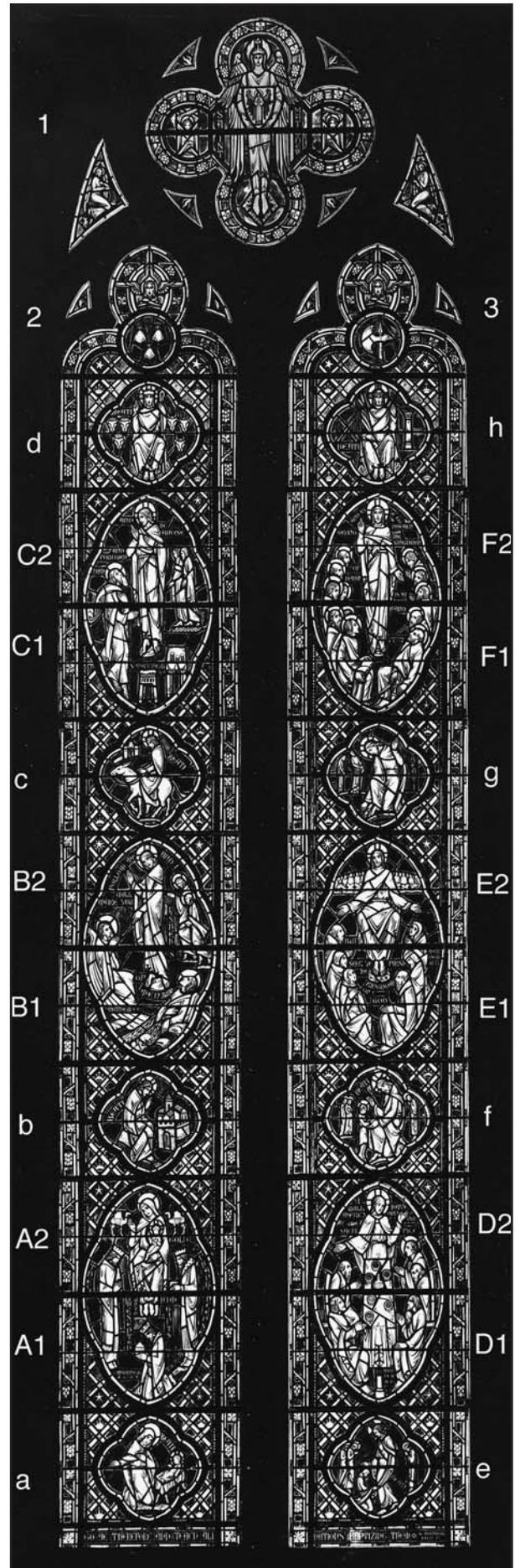
through a five-year stained glass restoration project at Grace Cathedral, and the Chapel of Grace windows are part of that project. Allen Dragge, President and Director of Reflection Studios, has been in business for 35 years. His connection



Above: Charles Connick at work painting a cartoon.

Right: Matthew window design.

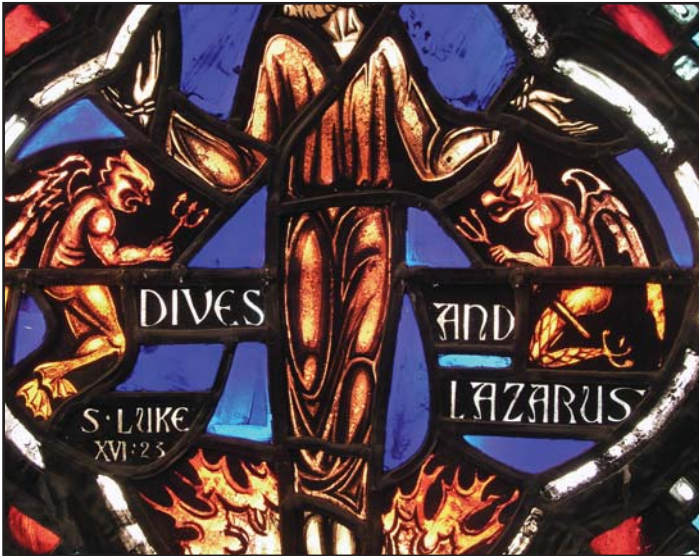
Photographs courtesy of the Grace Cathedral Archives.



with Grace dates back 20 years, when a construction accident damaged one of their apse windows. A previous repair and restoration phase took place in the late 1990s (*The Stained Glass Quarterly*, Spring 2002). The current project is funded by designated bequests, in particular a major endowment by the estate of former Grace Cathedral chorister Henry W. Edwards Jr.

“Connick didn’t accept ordinary boundaries for his work,” Dragge observes. “He pushed the materials to their limit. We’re trying to push our own boundaries too and learn from Connick’s work. In duplicating the windows, we’ve learned more about the craft than any other way. It’s like we have Connick as a mentor or master in the studio. The people here are really excited. This studio is a fabulous place to work. People like and respect one another.” Reflection Studios attempts to operate on egalitarian methods similar to Connick’s own studio, where each staff member is encouraged to learn as much as possible about all aspects of stained glass conservation.

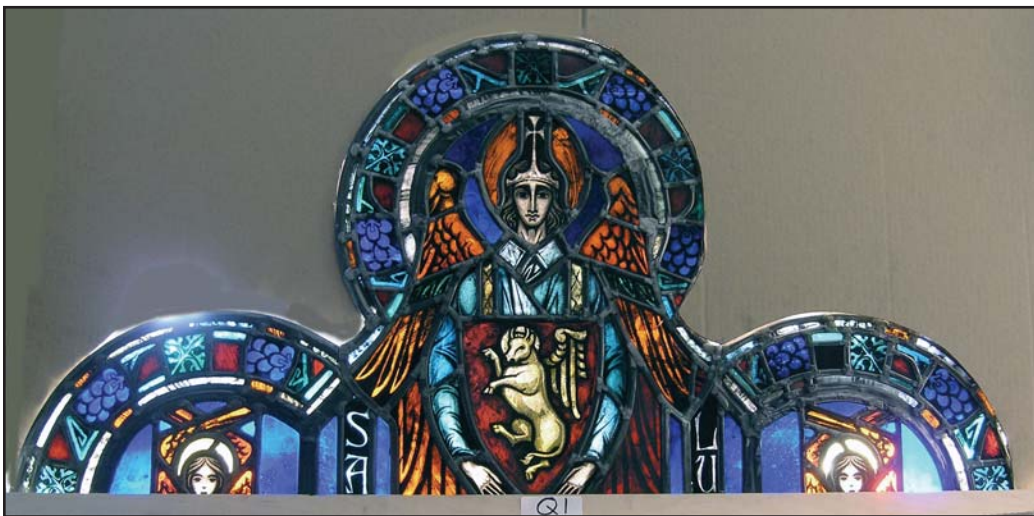
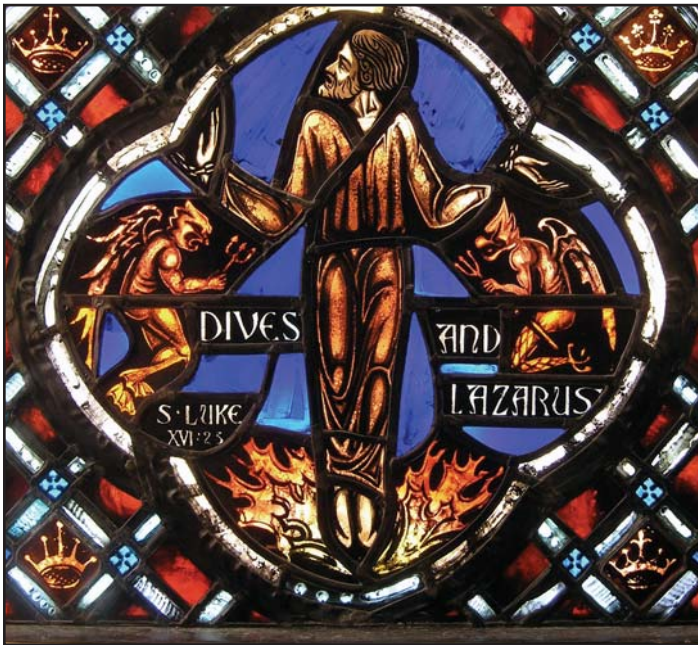
In addition to Allen Dragge, Reflection Studios has eight staff members. He offers a creative environment for those who want to learn. The average age at the Studio is 30, and Dragge is eager to teach young people



Six details of the St. Luke window before restoration. This window, which is installed at the Chapel of Grace, Grace Cathedral, San Francisco, was designed by Charles Connick in 1927. Grace Cathedral will be featured on the Stained Glass Association of America's Stained Glass Tour at the Annual Summer Conference this summer.

the craft of stained glass conservation. A mix of art-school graduates and those with more technical backgrounds brings a unique perspective to traditional stained glass craft.

Armelle LeRoux is one of the Project Managers. She has been at Reflection Studios for 13 years. She received a BA in Environmental Art



Details from the St. Luke window, after restoration.

from Ecole Supérieure des Arts Appliqués Du Perre, Paris. While still in France, Armelle worked as a glass painter and designer for Atelier Charles Robert (Brittany) and as a painter and

glazier with Atelier Durant (Maison Alfort) on the restoration of eighteenth- and nineteenth-century church windows. LeRoux learned about stained glass as she trained with various studios, first in

France and then in the United States in the years following. More recently, she directed and also contributed 13 of the splendid creations of glass art to the “Remembered Light Exhibit” at San



Connick signature plate

Francisco Presidio Chapel. This exhibit was created from shards of stained glass collected from bombed-out sanctuaries by Rev. Frederick McDonald during his experience as chaplain in Europe in 1944-45.

Courtney Dragge is an apprentice, following her father into the stained glass business. This possible career path has been on her mind since she was very young, but, after receiving her B.A. in Philosophy from UC Santa Cruz and spending a few summers working at the Studio, she decided to seriously try it out. The St. Matthew window came into the studio the second week of Courtney's apprenticeship, and she has worked on all aspects of the Chapel of Grace restoration. "The experience was very exciting and very challenging," Courtney says. "After the windows were re-installed, I felt very satisfied. It's been a lot of fun. I like the craft and the experience of learning something new."

The Chapel of Grace: Inspiration

Chapel of Grace stained glass consists of four double lancet windows in the nave and four single lancets in the apse. The medallion style, color scheme, designs, and some narrative themes (mostly Old Testament) are inspired by Sainte-Chapelle.

Sainte-Chapelle medallions come in an array of shapes: diamonds, cut angled

and regular rectangles, ovals, trefoil and quarter ovals, circles, half and quarter circles, trefoils and quatrefoils, and trilobes. These medallions were alternately interspersed for symmetry and variety in design. Chapel of Grace adopted only the alternating larger vesica/quatrefoil and smaller quatrefoil medallions found in Sainte-Chapelle's Passion relics and *Book of Joshua* windows.

Sainte-Chapelle's dominant color scheme is red and blue. Chapel of Grace employs predominant cobalt blues, also known as "Connick blue," with red ruby backgrounds. Connick also modeled the mosaic style from Sainte-Chapelle. Quatrefoils alternating with smaller quatrefoils on square or oblique lattice backgrounds are inspired by Sainte-Chapelle windows depicting St. John the Baptist and the *Book of Isaiah*.

Connick's theories about color derive from medieval symbolism, and he brought this to bear in his design schemes.

Blue is the most active, the most magical, the most mysterious of all colors in light; Dante had a fresh way of saying that blue is the color of divine wisdom, as red is the color of divine love. Dante also knew red as the badge of courage, as the color of passionate devotion, of self-sacrifice, and of martyrdom.

Sainte-Chapelle heraldry includes the towers of Castille and the fleur-de-

lis. Charles Connick employed extensive use of medieval motifs, including the fleur-de-lis and roses.

The Chapel of Grace (including a window of the Blessed Virgin just outside the chapel) contains 833 square feet of glass. By contrast, Sainte-Chapelle has 6,458 square feet of glass. Also, Sainte-Chapelle has four lancets per window, topped by rose windows with six foils and two quatrefoils. Sainte-Chapelle has a total of 1,113 figurative panels in 15 windows, while Grace scenes are depicted in 36 large and 48 smaller medallions. The glass used in constructing the leaded glass for the Chapel of Grace came from Sunderland and St. Helens, England, and also from Germany, France, and Belgium.

The Gospel Windows

A literal Bible in stained glass, Chapel of Grace's four nave windows depict scenes from Gospel writers Matthew, Mark, Luke and John. Each lancet pair is topped by a quatrefoil rose window containing an Archangel with a shield featuring the evangelist's symbol. Background lattices are aqua, and borders of vines, grapes, and leaves appear on all Gospel windows.

In the *St. Matthew* window, larger medallions depict scenes from St. Matthew's Gospel, such as Christ calling the disciples, the visit of the Magi, and the

Sermon on the Mount. Smaller medallions contain the Beatitudes such as Peace, Mercy, or Meekness. “Beati,” Latin for “Blessed,” is etched into the paint design. The Archangel Michael bears a shield with Matthew’s symbol of the winged man. Stars and crowns flanking the medallions, side tracery of kneeling angels with censers, and background of diagonal lattices with tiny budded crosses appear again in the St. Luke window.

In *St. Mark*, larger medallions contain scenes from his narrative such as Christ walking on water and various incidents of healing. Lancets are topped by Archangel Raphael holding a shield with St. Mark’s symbol of the winged lion. Recurring roses and fleur-de-lis motifs, and side tracery of seated angels with censers appear again in the *St. John* window.

In *St. Luke*, larger medallions depict scenes from the youth of Christ such as the Nativity, Annunciation to the Shepherds, and Christ in the Temple. Smaller medallions depict Parables: The Prodigal Son, The Lost Sheep, Dives (the rich man) and Lazarus, and The Good Samaritan. Lancets are topped by a rose of Archangel Gabriel holding a shield with Luke’s symbol of the ox.

St. John focuses on themes of the Good Shepherd and the Spirit. Larger medallions depict events from Christ’s life: Wedding at Cana and the Resurrection of Lazarus. Smaller medallions portray the Good Shepherd, the Samaritan woman, and the Adulteress. The lancet rose is topped with Archangel Uriel carrying a shield with St. John’s symbol of the eagle.

Passion Windows

The Chapel of Grace’s four single lancets in the apse depict themes and designs from Sainte-Chapelle’s central apse *Passion* window. Red medallions with orange and gold lattice appear on a blue background. Gold and white pomegranates fill the borders, along with

green foliage on a red background.

The first lancet, *Preparation*, depicts Passion events such as the Last Supper found in Sainte-Chapelle windows. The lancet top contains medieval Passion symbols of hammer and nails. The second, *Trial*, window depicts Christ before Pilate and Garden of Gethsemane events. The lancet is topped by sword and sheath. The *Crucifixion* window contains Passion symbols of cross and spear, and crown of thorns. Medallions depict the Crucifixion, Descent from the Cross, and the Entombment. The fourth window depicts events from the Resurrection to the Ascension. Symbols of lantern and stars appear, along with a Phoenix rising from the ashes, a symbol of resurrection which also recalls San Francisco’s 1906 fire.

According to Michael Lampen, the Grace Cathedral archivist, “Some of the complexity of the Chapel work is surely due to the rich detail and smaller scale of the Chapel of Grace windows (relative to those of Sainte-Chapelle), which can be seen close up and which closely emulate the rich design and color scheme of several windows of the Sainte-Chapelle, Paris.”

The Restoration

The initial restoration work began in June 2006, when the Reflection Studios team removed the first lancet pair: *St. Matthew*. Window restoration is



Courtney Dragge releading a St. Luke window panel.

labor intensive. *St. Matthew* contained more than 100 pieces of glass per square foot. The entire process of *St. Matthew*’s restoration took six months, this while working on other projects.

The windows were taken to the studio, and the opening in the Chapel was temporarily filled with sheets of Kokomo glass known as “Streaky Root Beer.” According to Grace Cathedral docents, this caramel-colored swirl glass, which has been filling in the gap throughout the restoration, turned out to be very popular with visitors to the Cathedral.

The goal of Reflection Studios is to retain the original Connick stained glass as much as possible including design, painting, glass thickness,



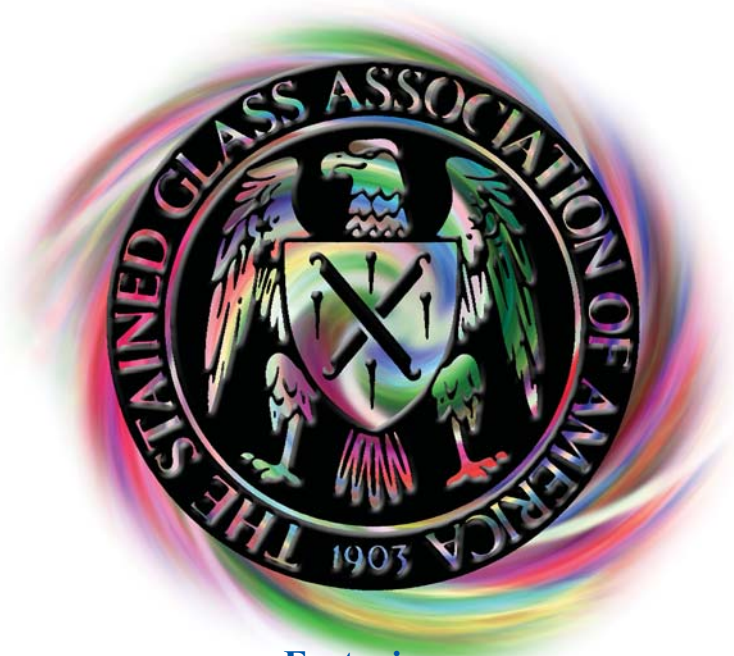
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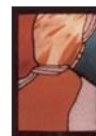


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Daniel Maloney soldering copper ties to a panel.

and especially lead widths. To this effect, photos are taken of the windows before any kind of restoration begins. Each panel is numbered and photographed. For each photo, information is recorded that may become important to the restoration, such as panel dimensions or already missing fillets.

Following the photo shoot, original rubbings are done. Grace Cathedral has kept excellent extensive archives of historic rubbings and photography, and this has been useful for the Studio's purposes.

Once the panels have been photographed, each craftsperson works on an individual panel from beginning to end (including putty and final polish), and is ultimately responsible for "signing out" on it. Only the final detailing, putty inspection, and soldering of the copper ties for the rebars is done en masse.

A numbered wall chart documents the step-by-step conservation process for each window: Photos Before / Rubbing / Soaking / Dismantling / Gluing / Glass Cutting / Painting / Releading / Grouting & Polishing / Plating / Copper ties / Photos After / In crate. Staff members mark the chart as they go along.

Because these windows are nearly 80 years old, they suffered from stress, metal fatigue, corrosion, and other problems. Lead fractures were pervasive throughout all windows with crumbling and fissures. Old leaded panels were kept for future reference.

A particular concern in all windows surrounds lead and lead putty. Connick used what was available during the Depression era; unfortunately, these are inferior products, especially by modern standards. The old leads are soft and brittle, so they could easily become airborne. Connick also made his own putty: 3 parts red lead, 1 part white lead; 1/2 part turpentine, 2 parts linseed oil, 10 parts calcium carbonate. (Don't try this.) This recipe is highly toxic and dangerous if ingested or inhaled.

Due to the safety hazard and Reflection Studios' commitment to green, hygienic practices, the panels were first placed in special trays and bathed underwater to ease the dismantling process and soften up the putty. In fact, the entire dismantling process is carried out under water. During this treatment, the crew wear protective gloves, HEPA filters and respirators, and use a vacuum. After handling the lead and putty, special soap was used for washing. The sludge was recycled according to local safety regulations.

For the restoration, Reflection used commercial putty by Dap, a recipe specific to the Bay Area. This putty is part thinner, part linseed oil and calcium carbonate.

Another major challenge is duplicating Connick's unique use of lead. His windows contain up to 17 different lead widths, ranging from 1.25" down to 1/64th of an inch. He might use up to 13 types of lead in any given window. In addition, the leads possess differing heart heights corresponding to radically differing thicknesses in the glass, ranging from 3/8th inch to 1/64th of an inch. This is a technique also found in many Tiffany

windows: plating and leaf leads. Connick used the glass and leads as part of a painterly technique. The leads become part of the window design in addition to providing support for the windows.

Tom Lehnartz, one of the Project Managers, made lead leaf to bridge the various thicknesses in the leads. This technique of double and triple leading, cutting the lead to shape to the forms and figures and glass thicknesses, means that the lead needs to be individually formed over the glass. Because of the juxtaposition of thick glass directly next to sometimes paper-thin glass, the team had to create a channel by making leaf lead and then holding it to the desired lead and bending it out. Lifted lead was made in cases where the glass didn't fit to standardized leads, so lead was cut to fit the glass. This was followed by continuous lead soldering, instead of just soldering at the intersection.

Reflection Studios built the window from bottom to top. Windows were completely releaded according to previous sizes, lengths, and widths using modern leads from DHD Metals.

Many years of exposure also affected the glass. Conditions of debility included bowing, cracks, holes, failed paint, and a few instances of vandalism caused by B.B. holes. Overall, the painted decoration, which includes considerable silver stain on the exterior surface, was well fired and is holding up well.

Reflection Studios attempts to conserve the original glass whenever possible. The crew even retained original grease pencil markings found on the glass. All cracks were glued with Hxtal epoxy or GE silicone RTV 118.

When they had to replace glass, mainly in the fillets, Reflection used Blenko glass, which is the most similar to Connick's original glass design. Connick used a mixture of European mouth blown glass and Blenko glass. In some cases, such as a wine flask of

about two inches in the *St. Matthew* window, the piece of glass had to be completely replaced and painted.

Connick designed his windows with the local weather in mind. San Francisco experiences the brilliant California sun as well as legendary thick fog, which drifts in from the Pacific Coast, about two miles from Grace Cathedral. He installed his windows in person so he could make needed adjustments. He wrote, "The stained glass window belongs to Brother Sun, and is in itself a mighty symbol of his natural beauty and power that may be transmitted into a new symbol of spiritual beauty and power."

Charles Connick's creativity shines in his use of glass as medium. He utilized glass plating to make his colors denser. Sometimes he double or triple plated the glass, and Reflection Studios has replicated his work. Instead of using a paintbrush to mark out a design feature, he often graded the glass thickness from dark to light, thick to thin.

Mouth-blown glass has bubbles, some pieces are curved, and in many instances, Reflection Studios discovered that Connick used a piece of glass that was shaded and molded to the form in the panel. Armelle LeRoux pointed out one example on the *St. Matthew* window, where a piece of textured glass was used in the donkey's flank. The piece was slightly rounded to follow the shape of the donkey, a feature which adds symmetry and dimension.

"Some of the glass colors are no longer manufactured," Armelle stated. "Especially after the 1960s, when manufacture became more industrialized and uniform. One can get those colors custom made, but it is very expensive. Some of the windows have at least 10 shades of blue. That depth of color can change the entire look of the window. For example, a piece of glass was shaded for the drapery, and the overall effect

is amazing. People are not bored with the project."

While Connick experimented with glass and leads, he brought this same playfulness and artistry to the painting. He usually painted on the glass with black or sepia trace or matte paint. In addition, he occasionally used enamels. He painted underneath in the grisaille style with a template or stencil but sometimes adopted a more free style. Some of the painting was three-dimensional. Some impressionist qualities can be seen in the painting. Members of the Reflection team had the most fun with the fingerprinting found in the windows. They were able to differentiate a number of identifiable thumb and fingerprints on many panels. Repainting was necessary on the broken or missing glass pieces which could not be re-glued.

Connick used acid etching as well. His repetitive etched designs of fleur-de-lis or crowns are taken directly from medieval glass symbolism.

In January 2007, *St. Matthew* was completed and re-installed and *St. Mark* was removed. *St. Mark* was somewhat simpler in construction than previous windows. The team's learning curve contributed partially to the ease of restoration, but the window also contained fewer pieces of glass. A full crew worked on the window, and there were fewer interruptions. In one panel, a piece of Connick's glass had warped in the kiln, which Reflection Studios retained in the restoration. The Reflection team also noted that *St. Mark* has some art deco motifs in the painting design.

St. Mark was reinstalled in June 2007. The *St. Luke* restoration took place from June 2007 to mid-September 2007, and *St. John* from mid-September to January 2008. Reflection Studios followed the same careful conservation outlined, and, despite the difference in painting or construction style, Connick's

windows evidenced the same high-quality craftsmanship.

The *Passion* windows will be restored 2008-2010. In the past, one of the *Passion* windows was entirely covered with silicone to prevent leakage. Silicone is a viscous material, but the panels will be soaked in hot water for easier removal before scraping. One main concern is that the glass could break during this process so the team will be cautious. Reflection will waterproof the window, relying on putty.

"Each panel has a story of its own," says Armelle LeRoux. "I think that's what Connick tried to do. He knew the European technique very well, and he wanted to challenge the Gothic style. I believe he succeeded in that chapel."

References

- Allen Dragge Interviews, Reflection Studios, Emeryville, California, June 2006-December 2007. Additional interviews at Reflection Studios with Armelle LeRoux and Courtney Dragge.
- Michael Lampen, Archivist. Web site feature: Gospel in Glass, From Matthew to John: Iconography of the Charles Connick Stained Glass windows in the Chapel of Grace, Grace Cathedral. www.gracecathedral.org/enrichment/features/glass/index.html. c. 2004 by Grace Cathedral and Michael Lampen.
- Connick, Charles J. *ADVENTURES IN LIGHT AND COLOR*, (New York: Random House, 1937).
- Charles J. Connick Foundation, Newtonville, MA. www.cjconnick.org.