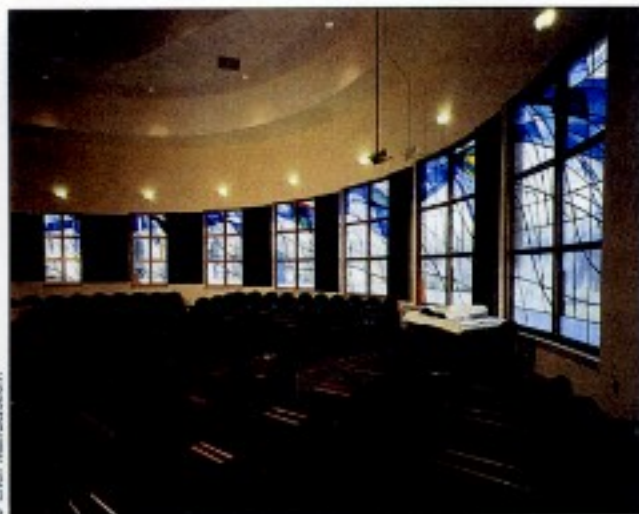


WORKING WITH A STAINED GLASS ARTIST

By Ellen Mandelbaum



Stained glass has had varied fates since its brilliant origin a thousand years ago in the Middle Ages. Today, a rich feast of stained glass is available. It has burgeoned: New techniques are being explored while the medieval technique of leaded glass is still used. Design ranges from historic to minimalist. Stained glass now uses materials and aesthetics developed from many sources. Glass that recalls Tiffany and LaFarge's opalescent material is now available. The most treasured mouth-blown antique glass comes from Germany, France, and the U.S. Diachronic glass developed from the space program.



© Ellen Mandelbaum

Transparency of Adath Jeshurun Synagogue's chapel windows.

In the 1980s large studios and their artists offered many styles, which often followed historic precedent. The secrecy that had characterized the field of stained glass began to dissolve as artists such as those in the Glass Painting Society in New York passed on information to aid the field. In 1980 Albinus Elskus wrote the seminal *The Art Of Painting On Glass*. With information like this a newcomer could now work independently.

In the 1970s offbeat glass art came out of a hippie culture on the West Coast. Often these were autonomous panels, not part of architecture. Also influential were German artists such as Ludwig Schaffrath, Johannes Schreiter, and Jochem Poensgen, who developed powerful abstract styles intentionally different from prewar German art for the many churches built or rebuilt after the war.

ELLEN MANDELBAUM is an artist who works in stained glass, with a studio in Long Island City, New York. She can be reached at ellen@emglassart.com.

Young artists met at conferences such as Portoon and passed the word along that it was possible to function as independent artists: to contract for the job and subcontract the fabrication work to studios, or make it themselves. The studios continue to serve a valuable function but artists now have many options and the field is more open.

I am writing here from my experience as an independent commissioned artist. I cannot speak for everyone who works in stained glass, but the following description gives a basic idea of how stained glass is made and suggests productive ways for architects to work with artists.

Stained Glass Appreciation

For architects and building clients working with stained glass, it helps to build an appreciation for the medium. The process of seeing stained glass clearly is time consuming. The most important thing to do is to see the art. Go to museums and sacred buildings and take time looking. As in all art, look for elements of composition; design: symmetrical and asymmetrical; texture: rough and smooth; size of units; color; character of line; the intention of meaning; all the elements of art.

We see things through the stimulation of the optic nerves in the eye by light, either directly from its source or indirectly by reflection from other objects. Illuminated bodies not only reflect light but sometimes also transmit it. Transparent objects such as stained glass allow light to pass through them. We see paintings in a museum and most objects in everyday life in reflected light. We see stained glass in transmitted light. Many glass artists think of themselves as "working with light." Beyond other art the glass glows and the bright colors make an immediate impact, but it may take time to overcome this immediate effect and to see the finer points of stained glass. To appreciate glass art, spend time looking at its intricate details. It helps to notice in the glass the use of the lead line; different widths of lead line; rhythm of the line in contrast to the cut glass shapes; different degrees of transparency; different textures of the glass itself; evocation of space and scale related to the size of the building.

Selecting and Securing the Artist

It is important to check the artist's previous work, resume, and references. Beyond these factual questions the choice of artist may depend on chemistry and vision, and ultimately on trust that this person can do the work for your holy space. The process often begins with an interview. It may be preceded by a small competition with each artist submitting slides or a folder of work. The architect or committee may ask the artist about his or her

vision. As the selection narrows the artist submits a proposal. A studio visit is important; so is a visit to an installation of the artist's work if possible. A liturgical consultant can smooth the process by knowing what is standard in the field.

Typically, the architect recommends the artist but the contract is between the artist and the client. The fee and contract are negotiated and there are different practices even among different religious groups. Artists have no Standard AIA Contract. The architect and liturgical consultant can help by treating the artist as a valued member of the team. The artist may be asked to make a preliminary design and should be paid for services once design begins. The contract may indicate standard artist's rights such as copyright.

Of course, fees vary. They can be based on an arts budget, on estimating the amount of time and materials, or on a square foot price. If the cost of a stained glass project is too high, it might be adjusted by altering materials and techniques. Smaller works often cost more per square foot.

Elements of Collaboration

Once the artist is selected and under contract, there are steps that the architect and client can make to aid the artist in this collaborative effort. Among these:

- Bring the artist in early. The artist can help explore possibilities for stained glass and early consultation with the artist or fabricator can avoid mistakes in the choice of frame. Discuss which sizes and shapes of mullions work best. Know the limits to glass size and reinforcement in the early stages of a project.
- Provide the artist with plans and elevations, and frame sections even before the first interview. They are necessary for bidding and will be necessary to begin designing. The artist should know what the building looks like, and what is required of the art glass.
- Include stained glass in the budget from the start, allowing approximately 2 to 4 percent of the construction cost. Unpredictable things happen in the course of building. The art budget is often the first to go but planning ahead affords it a chance.
- Know your schedule, budget, and scope of the art glass. This is key information that the artist will need to prepare a realistic bid.
- Provide in a timely fashion approved shop drawings and measurements needed before fabrication can begin.
- Stained glass is not insulated (the space under the lead flange is waterproofed with putty), but stained glass is a fine additional layer when added to the glass of the building.
- Stained glass can be added after the fact to the original frame but it is tricky. New stops are made and a space is allowed in between the window glass and the stained glass. The fit may not be perfect; it may be difficult to match the finish of the stops.
- The easiest frames to use provide room for the stained glass and the window glass in the same integral structure. This type of frame costs a little more but is valued by the artist, architect, and installer, and is recommended.

The contract usually designates three basic phases of work: the Design Phase, with a policy on revision, and design approval; the Fabrication Phase, which begins upon design approval (fabrication can be lengthy, depending on project size, complexity, and the fabricator's schedule); and the Installation Phase.

Design Phase

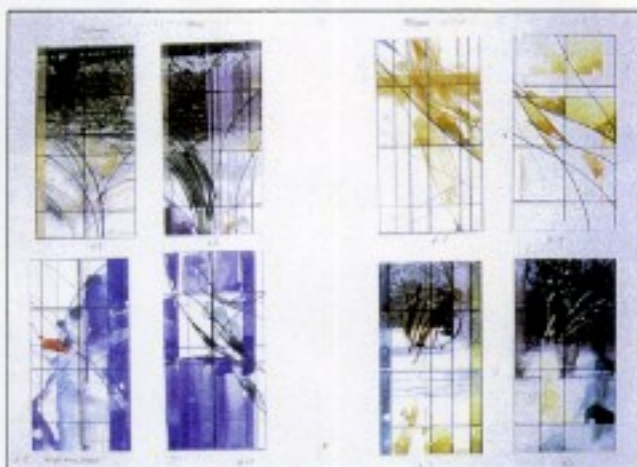
Stained glass design usually takes place on top of a scale drawing of the window with the necessary reinforcing bars indicated in place. Fabricators prefer one-inch-scale drawings because they show the right amount of detail.

Like the architect, the glass artist must respect certain givens. It is important that the architect and client speak with the artist about the program and architectural design concerns so the artist can factor these into the design process. The goal is to seek completeness, integrating the many needs of client, light, architecture, etc. into an overriding creative whole.

The presentation of the design is a dramatic culmination of this phase. In it, the artist can explain her intentions. The client and the architect have the opportunity to respond and affirm their approval and trust that the artist can share her gift. While designing the artist has been looking for a way to present his vision clearly.

Some of the most useful mediums for design presentation include:

- The design drawn on an opaque surface;
- The design on a transparent surface such as prepared acetate (this is not precise and won't be exactly the same as stained glass);
- A maquette (the design shown in a simple model, usually presented flat);



Scale drawing presentation of stained glass windows.



Presentation of stained glass on transparent medium.

- A vertical model of the window area showing the stained glass in place (this can be photographed as a slide and projected).
- A computer printout of the design on transparent film;
- A photo of the design montaged into a photo of the site.

Good presentations often include a scale-size image of a person to orient the viewers. There is usually a provision for design revision, if needed. Once the design is approved, final documentation can be completed and fabrication begins.

Fabrication Phase

The leaded method of fabrication is the most common for many reasons. It can expand and contract in architectural applications; it is historic, and practical; it is permanent; repairs are easy; the lead can be opened and a new piece of glass inserted. It is also a natural way to work with the most beautiful kinds of glass.

The brittle glass is held together by lead, which is soft and stretches. Metal bars provide reinforcing. Individual panels can only be so large, but can be combined with other panels. The lead is held together by solder at the joints. The design of leaded glass is limited in that all shapes are surrounded by the dark lead line, though lead lines vary in width. Other methods of fabrication are in the process of development, such as lamination: colored glass is laminated or glued to plate glass sheets. This offers the promise of an uninterrupted large area of glass unbound by a lead line.

To prepare a design for fabrication, first a "blank" is drawn on paper, based on the architect's approved shop drawing. This shows the outline of the shape and measurements of the glass windows. Lines where the glass will be cut are drawn based on the artist's scale drawing. This full-size layout is called a cartoon. Paper patterns are then cut from the cartoon.

Glass is then selected for each pattern piece and is cut by a skilled cutter. The artist keeps track of how the whole work will look by placing each cut piece on a table layout of the window. In a big project it is a challenge as the work proceeds to see the many pieces as a whole.

The stained glass artist does not make the glass, but buys it from a supplier. It is made in the U.S. and in Europe specifically for this trade. All stained glass is roughly an eighth-inch thick.

Most American-made glass is machine rolled. Molten glass is rolled out over metal plates, which cause various textures. The glass can be fairly transparent or opaque. Tiffany glass was machine rolled. It is very varied, mottled, or streaky, and rich with color.

Antique glass is not old, but has bubbles and striations similar to old glass. It is mouth-blown into a cylindrical shape, cut open at both ends and down the middle, and flattened. A sheet of antique glass is approximately 24 by 36 inches. This glass is highly prized. It has nuances of color and texture and varies in thickness. There are many kinds of antique glass, often with medieval-sounding names. "Reamy" is a special antique glass with a texture that looks like moving water. "Seedy" glass has bubbles made by adding a potato to the mix.

"Drawn antique" glass is not as expensive as antique, and its colors are not quite as rich as antique. It is consistent in thickness and has an attractive pattern of striations.

New glass is always being developed. Each type has its characteristic way of cutting. Antique is softer than machine-rolled glass, and cutting it can be unpredictable. It often requires a carbide cutter.



Marian Woods window showing versatility of stained glass texture and painting.

Glass painting is an option and enrichment of the stained glass technique. The artist paints with metal oxides, which are held together temporarily by gum Arabic and water in a tempera-like consistency. Brush strokes and painting methods are, of course, particularly personal. The glass pieces are held in place on an easel in a window or light box with hot wax so the artist can see them against the light while he works. Then the painted pieces are fired in a kiln at 900 to 1,200 degrees Fahrenheit to make the metal oxides permanent.

Yellow, golden silver stain is the only stain in stained glass. It is transparent and probably gives the name to stained glass. Painting is usually black or earth-toned, contains lead, and divided between matt (tone) and trace (line). There is now unleaded paint on the market. Glass paint colors are not as effective as the colors of the glass; the beauty of color comes from the glass itself. Glass painters can scratch through the paint and let out shining lines of light. This is the best medium for drawing. Brushed line is agile and can easily make a face. Imagine having to cut out the lines of an eye and wrap them in lead; how much easier it is to draw the eye with glass painting. Paint moves and mingles among the cut glass pieces and opens up rhythms between separate colors. The brushed line can echo the lead line.

Next, the glass pieces are arranged on the glazing drawings or "cartoon" and held with lead came of different widths, which are soldered at the joints. The solder is usually a small area that is fairly smooth. The glass is waterproofed, puttied, leaded, and brushed to an attractive finish, ready for installation.

Installation Phase

Ideally, stained glass is installed after all of the messy work is done and all of the heavy machinery is out of the way. A good fabricator who works quickly can install a big job in less than a



© Ellen Mandelbaum

Marian Woods chapel space ready to receive windows

week. It is helpful if the architect has allowed room in the building for the necessary scaffolding. Sometimes the fabricator shares scaffolding with the contractor. The artist oversees the placement of the work and for the first time sees the work as a whole. Now the architect, clergy, and congregants first begin to enjoy the quality of light and see how special it is, how the glass projects colors of light into the room, how it defines the perimeter of the building, and how this amazing glass art at the edge of the sacred precinct helps to create a sacred space.



© Ellen Mandelbaum

Installed "Resurrection" windows are the focal point of the Marian Woods chapel.

Further Reading

- *The Art of Painting on Glass*, Albinus Elskus, New York: Charles Scribner's & Sons, 1980.
- *The Guild: The Sourcebook of Architectural & Interior Art*, 1-16, Wisconsin: Guild Sourcebooks, since 1986.
- Sarah Hall, *The Color of Light: Commissioning Stained Glass for a Church*, Chicago: Liturgy Training Publications, 1999.
- Andrew Moor, *Architectural Glass Art: Form And Technique In Contemporary Glass*, London: Mitchell Beazly Publications, 1977.
- E. Crosby Willet, "Stained Glass Primer," *Faith & Form*, Vol. XXX, Number 3/1997, p. 11. [6](#)

FAITH &
FORM

JOURNAL OF THE INTERFAITH FORUM
ON RELIGION, ART AND ARCHITECTURE
VOL. XXXV • NO. 3, 2002 • ISSN 00147001