By Emerson Howell Nagel
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HOW TO ADD STAINED GLASS TO YOUR HOUSE (1,086 words)

On the next sunny Sunday afternoon, go stand just inside the sanctuary doors of the chapel at the Quigley Seminary at Rush and Pearson. See how the sun dances behind the glass in the West Rose window, its brilliant light streaming down in rays of emerald, ruby, topaz and sapphire. The light is almost mystical. Looking at the other fourteen nave and seven sanctuary windows bathing the chapel in a prism of breathtaking pyrotechnics, you get a sense of why stained glass has been used to depict holy images almost since man figured out how to melt sand.

Stained glass isn't just for churches, though. It can be just as beautiful in your own home. And you're in the right city for it, too, because Chicago is one of the world's centers of stained glass. So says E.B. Smith, the "Smith" in founder of the recently opened Smith Museum of Stained Glass Windows at Navy Pier.

Rolf Achilles, the museum's curator, says "In the 1920's and 1930's somewhere between 25,000 and 30,000 bungalows were built in Chicago, and almost every one has six to twelve art windows." The bungalow windows are generally Prairie-style, geometric: "The long sliver of glass with a gold square set in lead is the staple of bungalows."

Smith started his collection in the 60s, when he says there was a lot of glass available. "Stained glass was seen as too Victorian then," and a lot of it was removed and destroyed. Often the only thing wrong with pieces he found was that they were covered with a century of soot from being used as "just windows". His collection, which covers an 800-foot-long series of galleries at Navy Pier, includes about 60% secular work, and 40% religious.

Over the years that he's been collecting and then setting up the museum, Smith worked primarily with the Botti Studio of Architectural Arts in Evanston.

The Botti Studio dates back to 1684, when it started out as an ecclesiastical studio in Agropli, Italy. Today they also have studios in Evanston, Sarasota and San Diego. And they don't just do churches.

According to Chris Botti, fifth-generation-grandson of the founding Botti, "We do lots of homes throughout the north shore, even elsewhere." For example, they conserved some windows in Clinton's home in Westchester. And when they dismantled the old Pullman estate in Lake Geneva Botti took out the Tiffany skylights and put them in different houses around Chicago.

You don't have to be an ex-President or found a railroad empire to have stained glass windows in your home, though. "You could have just be a little 1920's bungalow on the south side of Chicago with a beveled window that you need to match." Or maybe you want to add some "prismatic color" to the big entranceway of your new house in Barrington. Many architects and interior designers bring them designs to produce in glass, everything from traditional to contemporary to abstract.

Stained glass in your home can be as simple as a single piece of textured colored glass, or a complex design of glass in a matrix of lead holding together the individual mosaic pieces.

There is really almost no place in your house where stained glass won't add a lovely touch of je ne sais quoi: sidelights and transoms, skylights, decorative screens that separate living

spaces, cabinetry, every type of light fixture, and of course, windows. Stained glass windows for homes run the gamut from simple repeated patterns of squares or diamonds called gauge work to complex, very ornate designs.

Simple or not, the principles of stained glass are the same. The design is created by color, combinations of colors, variances in thickness of glass, texture, placement, and the use of lead. The latter is an art unto itself, since the lead came (the technical name for the track used to hold the pieces of glass together) forms the separations that create a negative pattern.

Then there's the glass itself. It comes from all over the world– England, Germany, France, Spain, and lately even China and Mexico – including the US. The Kokomo Opalescent Glass Company in Kokomo, Indiana produced a lot of the glass for Tiffany originally (Tiffany stopped doing stained glass in the 1930's).

In choosing the color palette for your design, Jim Edbrooke, one of Botti's artisans, talks of how important location is to color. He explains that the elevation of the window and the angle at which it will be viewed affects how colors appear. In selecting colors for stained glass windows in a church he says, "We use more vibrant and deeper colors for the south and west sides because otherwise the color will get washed out. On a north elevation we don't go too deep."

Botti says that the most popular colors this year are cool tones, blues and greens. Glass can be ordered to any color though, since "the purest color in nature is color coming through glass." From highschool chemistry, you may remember that glass is made of silica sand, minerals and oxides. It's the combinations of those and temperature that gives the glass color. "You get variances depending on the company and how they process the glass. Some companies mouth-blow or hand-roll the glass. The more consistent colors come in machine-manufactured or machine-rolled glass."

The most expensive colors are reds and "flash" glass, multiple layers of glass where the top layer is blasted away in a pattern. Stained glass that looks painted is actually glazed; the glaze is annealed in a kiln just like pottery, so it bonds like fine chinaware. They can also apply a matte finish for a chiaroscuro effect. A matte finish can also be applied for a chiaroscuro effect.

By this point you might think stained glass is prohibitively expensive. If you want windows like those at the Quigley Seminary, patterned after Notre Dame's Sainte-Chapelle, it is. But Botti says that materials for most windows average $50-70 per square foot. The cost of creating the window depends entirely on the complexity of the design. A simple window with lead panes starts at around $50 per square foot, then go up from there.

As far as how long it would take to have a stained glass window made for you, Botti says it depends entirely on the complexity of the design. Six to eight weeks is about average for a residential job.

So maybe a 40-foot rose window would be a bit much for the living room. But wouldn't it be lovely to see the sun streaming through a stained glass skylight, or a matched pair of sidelights for the foyer?

SIDEBAR The Making of a Stained Glass Window

Jim Edbrooke learned how to cut glass on his own and had done art shows with friends, making small windows and terrariums. His interest firmly hooked, he joined Botti Studio as an apprentice at age 23.

The apprenticeship took about five years, “but you never stop learning,” Edbrooke says. Today he works about half the time on new work, the other half on conservation and restoration.

According to Edbrooke, the process of creating a stained glass window starts with a design. Then they pick , then the colors and textures of the glass. are chosen.

Next a full size drawing is done and transferred to two pattern copies, one for the glass-cutting and one for the glazing. The patterns are marked with the appropriate glass colors, textures and came instructions.

They then use special shears are then used to cut the pattern pieces out. They cut “to the heart of the came” so the finished piece comes out to the right size. The came is a flexible metal track, usually made out of lead, which in profile looks like the letter “I”. The glass fits into the sides of the “I”, and the cross-pieces at top and bottom are what show on the front and back of the window. The heart of the came, the vertical line in the “I”, is the same regardless of how thick the came appears on the outside.

After they’re cut, they take a pile of pattern pieces, each numbered so that it corresponds to the numbering on original drawing, and cut the glass. They use a regular glass cutter to trace around the pattern, breaking the glass away with glass pliers.

When the glass is cut, they lay out all the pieces on the glazing copy of the pattern. Then they frame out whatever the finished shape is, and build into that. The pieces are held together by the came, and when all the pieces are assembled and the measurements are checked, they solder the junctions wherever lead meets lead.

Next they put in a putty into the channels created by the lead. The putty remains elastic, which weatherproofs the window and keeps the glass from rattling.

The final step is to solder on support bars, generally every 12 inches horizontally, and vertically if necessary. Then the window is installed and voila!

By Emerson Howell Nagel
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SHOPPING FOR THE RIGHT HARDWARE STORE (966 words)

I've just gotten back from my third trip this weekend to the hardware store. I'm fixing an office chair I found in the alley. First, I needed two new wheels. When I set out, I didn't know anything about wheels, but now I know everything I need to know. Starting with the fact that they're not wheels, they're casters. My second trip was to exchange the first pair I got for a slightly different pair, with a different shank. This last trip was to replace the turn-knob that adjusts the back. They didn't have any turn-knobs, but after I explained what I was doing, we jimmied something together that works perfectly.

I'm sitting writing now in my comfortable new office chair, rolling easily from PC to printer to fax machine, pleased as punch.

Experiences like this one, that I've had more times than I can count, are what make hardware stores such wonderful, special places. Where else can you get such personal service and expert advice for the price of two casters and a turn-knob?

Of course not all hardware stores are this helpful. So it pays to do some research when seeking the hardware store that's just right for you. You also have to factor in your skill level - novice or expert - and the kinds of projects you work on. Different hardware stores cater to different people and projects.

For me, the most important criteria in choosing a hardware store is service.

"Originally the employee actually got every piece of product out of the back room," says Ralph Lemoi Dupuis, great grandson of the founder of Lemoi Ace Hardware in Evanston. Today you do your own shopping and use the staff for advice. But even so, experienced professionals make a big difference in how well your questions are answered and what you end up buying.

Dupuis has been at Lemoi's helm since 1981 when his father died and he came in to help out "temporarily." One of his children is already showing an interest – his 9-year-old daughter straightens things out on the shelves unasked. He and his employees are hardware experts, and someone's always available to answer questions.

"When you go to a local hardware store you're going to have people who know what they're talking about and give you a lot of attention," says Ben Jacobson, of Conifer Research in Evanston. Jacobson is a cultural anthropologist as well as an enthusiastic hardware-store-goer. His company does observational research, basically observing what people do. "There's very often a stable set of employees, and you can see the same guy each time."

And just as an aside, it's nice if the staff are friendly, but it's not crucial. Some of the most knowledgeable people I've worked with over the years have been very gruff, at least at first.

Next on my list of criteria is probably convenience, since I usually have to make more than one trip per project.

Convenience for me means the candidate shouldn't be too far away, it should be laid out obviously and clearly, there should be available parking close by, and I shouldn't have to make a lot of other stops. Delivery is nice too.

"We stress the ability to get in and out of the store quickly," says Steve Sherman, owner of Highwood Paint and Hardware in Highwood. His store is about 7,000 square feet in size, and is very manageable in terms of scale, layout and flow. The store has five different spaces, added on one building after another, and each time the flow was re-worked to make it more convenient.

After service and convenience I look at selection.

The thing I like about hardware stores is that most of them are truly neighborhood stores, attuned to their local markets. Highwood, besides a full line of hardware, carries fishing equipment (bait, tackle and licenses) because they're three blocks from the lake and there aren't any other fishing places nearby.

Clark-Devon Hardware, a True Value store in Chicago's Edgewater neighborhood has three locksmiths who do nothing but repair and replace old locks.

"We carry a line of locks that we found in Texas that are real old-fashioned looking, perfect for the older homes which Rogers Park is loaded with," says Ken Walchak, third-generation owner. You'll also find a greater range of things to fix and replace old plumbing, or replacement doorknobs that are likely to match the doorknobs in your house.

Another factor that has been important for me in choosing a hardware store is how connected they are to their local hardware community.

At Clark-Devon, Walchak says he acts as an informal employment agency for handymen and contractors in the area. So they may be able to help you find someone if you need a tile guy, or a plumber who knows how to fix water pressure problems, or an electrician who knows knob-and-tube wiring.

Finally, I consider ambiance when choosing a hardware store.

"In a neighborhood hardware store you feel like you're in a knowable place," says Jacobson. "It's bounded, it has a sense of not being vast. Even just the way the merchandise is likely to be stacked and organized is kind of comforting." You know what he means. The wood floors, that comfortable-old-store smell. Some hardware stores just feel homey.

Whatever your skill level or preferred project, spend the time and choose your hardware store carefully. Check how each candidate scores on your own list of criteria. Make sure they carry different choices of the kinds of things you usually need. Get to know the people who work there. See if they're interested in the details of your project, and if they offer helpful advice, even if it's, "We don't carry that, but I know who does" (a sure sign of a good hardware store…)

Sidebar: Hardware Cooperatives (386 words)

As a general rule, I like to patronize independent merchants, the little guy. So for years, I had a slight bias against Ace and True Value. I've discovered, however, that I've been wrong all this time. They aren't, as I'd thought, big retail chain stores. They're actually independents who belong to a dealer-owned cooperative. I was also pleased to discover that they're both headquartered here, True Value in Chicago and Ace in Oakbrook.

"Ace and True Value are both about the same size and work the same ways except for subtle differences," says Ken Walchak, owner of a True Value store, Clark-Devon Hardware. Members own the organization as stock, but all the stores are independently owned and operated.

"When coops started," says Walchak, "the key was the circulars, which really brought people into the stores. Coops changed the nature of hardware stores. They were able to become much more sophisticated than they'd ever been before."

The advantage of a coop is that it provides advertising, which independents often can't afford. And it offers members the opportunity to buy product at very competitive prices.

"We have complete control over the selection of merchandise," says Dupuis, of Lemoi Ace Hardware. "We have to buy a certain percentage through Ace but they have over 90,000 items in their warehouses across the country." Dupuis meets with his fellow dealers monthly to share information and ideas and even trade merchandise.

Which all sounds great for the customer, and probably is, in most cases.

Steve Sherman at Highwood Paint and Hardware in Highwood, has a different view. Highwood is one of a diminishing number of independents in the area, and in the eleven years Sherman's owned the store, he hasn't been tempted to join a cooperative.

He thinks the coop advertising requirements are too expensive (and those costs have to get passed on to someone, remember). He also doesn't like the purchasing requirements, especially in paints (the line he carries isn't offered by the coops).

For me personally, now that I know Ace and True Value aren't national chains, the nuances of cooperative vs. non-cooperative don't matter. I'll give anyone a try, as long as they offer good service and don't get so sophisticated that they loose that indefinable air of comfortable neighborhood-iness that only the right kind of hardware store has.

By Emerson Howell Nagel
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SCREENING (1,185 words)

Evelyn and Bernard Raden moved into their house in Evanston 28 years ago. The previous owners hadn't used screens on the lovely wrap-around porch, but had stored the original screens in the garage. The Radens eagerly pulled them out, and with the help of a carpenter, re-installed them.

There are twelve 10-foot-high panels plus a door, so the Radens recaptured a lot of space. Enough for a swing, a kitchen table and chairs, and even a wicker couch. They also installed a ceiling fan and a light.

"We eat out here in the summer all the time," says Evelyn Raden. "It's nice to sit and watch the people walking down the street. And it's wonderful when it's raining." Her husband Bernard Raden is a psychologist and even sees clients on their porch.

Screened-in porches are a great way to add an extra room to your house for the warmer months. The screens not only keep out bugs, but they also provide a sense of enclosure and privacy. And they keep pets and children from escaping the confines of home without supervision.

There are a number of choices to make once you decide to screen in your porch: what material to use for the screen frames, what kind of screening to use, and whether your screens should be removable.

The beauty of aluminum screen frames is that they're almost invisible. The most popular size is 5/16 inches thick by 3/4 inches wide, says Carol Bernahl, owner of Alpine Glass and Window Company in Wilmette. Aluminum screens have a baked-on finish that comes mainly in white, bronze or silver. She says lately more people have been going to aluminum because it's maintenance-free, holds up better to the elements than wood, and costs three times less.

As far as the screening itself goes, aluminum screening is the strongest, and holds up best to pet, bird and child attacks. The Raden's screens have wood frames with aluminum screening (a good thing since they have dogs). They've had them repaired every now and then, and there are a few tears and cuts, but basically their screens are still in good shape.

Dan and Ann Crepeau decided to use aluminum screening for the porch on their Crystal Lake home because they have two young sons and lots of birds in their backyard. Bernahl says aluminum will oxidize over time, but it can withstand much more than fiberglass.

Fiberglass screening bags, sags and tears easily, but doesn't rust. It's also 1/3 the cost of aluminum and more forgiving to work with, according to Ken Raap at Lemoi Ace Hardware in Evanston.

Raap has been working with screens since he was eleven. He started by helping out his uncle, who owned Petersen Screen & Window Company in Evanston. Nowadays, Raap does all of the screen-work for Lemoi.

Besides aluminum and fiberglass, Raap says he's also installed copper screening for some of the homes along the lake. "It's actually a bronze mixture, and it's the most expensive but it lasts forever."

Then there's the big question of whether or not you want to be able to take your screens down. The Radens leave their screens up all winter. But it's easier to repair a screen if you can take it down. Another issue is size. Taking down a 3-by-7 foot panel is tricky. Getting it back in, especially if your house is older and not perfectly square, can be a nightmare.

The last thing you need to consider in installing porch screens is whether you want to do it yourself, or get professional help.

Crepeau opted to do it himself. Actually, he built the whole porch. With the aid of a do-it-yourself book, he constructed the porch then installed the screens. The screen part of the project took him a full day.

If you're going to build wood screens, you'll need four pieces of wood for the frame, a cross piece for added support, screening, and molding to hide the staples that hold the screening. For the sides and top of the frame, Raap recommends using 5/4 inch by 3 inch stock, since it's a full 1 inch thick. Then he uses a 5 inch bottom rail, and a chair rail at 31 inches from the bottom that is 3 to 4 inches wide.

To make the corners, Raap advises against mitering (cutting them at a 45 degree angle). Instead, he butts the two pieces together, then screws or nails them. There's so little surface area that glue doesn't help, he says, and corner braces aren't needed because there isn't a lot of strain on the corners except when you're installing the screens. Once the frame is assembled, you stain or prime and paint it.

Next comes the screening itself. It's sold in different widths (from 2 feet to 7 feet), so you get a piece that's wide enough to allow for a 1 inch overlap all around. You can cut fiberglass screening with scissors. For aluminum, you'll need tin snips.

Lay the screening across the wood frame, and staple it across one end, every 3 to 4 inches for aluminum, every 2.5 to 3 inches for fiberglass. Then staple the other end, pulling the screening taut. Finish with the sides, pulling the screening taut as you go.

You finish the screen by affixing molding or screen stop over the line of staples, to hide the edge of the screening. Raap has seen lots of different moldings used. Since it's just decorative, you can use anything from plain lattice to quarter-round. Nail the molding every 2 to 3 inches, then trim the screening that sticks out with a utility knife.

Finally, attach I-hooks to the wood frame if your screen is going to be removable.

If you've decided on aluminum frames instead of wood, you'll need to get the parts from a screen supplier. They're pretty easy to build. "The pieces fit together like an erector set," says Bernahl. On most screened porches, she says you'll need a top, bottom and side channels, corner pieces, the screening itself and support rails between the screen panels.

Once you've put the aluminum frame together, you need to attach the screening. Watching Raap work it looks easy, but it may take some practice to get it right. You'll need something called a screening tool (like a thick pizza wheel) and spline (a piece of black rubber that looks like very thick spaghetti).

First, you place the screening over the frame with a 1 inch overlap all around. The idea is to wedge the screen into the channel around the frame using the rubber spline. Starting at the ends, you run the screening tool along the back edge of the spline, between the rubber and the outer edge of the channel. Ease the corners with screwdriver, then trim the excess with a utility knife.

In the evenings, when the mosquitoes come out, Dan and Ann Crepeau sit happily on their bug-free screened-in porch. They light some candles, turn on a little music, and sip a glass of wine. "Neighbors migrate to our porch after the sun goes down."