

Rick Silas

Upcycling Tempered Glass as Art

by Colleen Bryan

When Canadian artist Rick Silas sees the glass face of a commercial building, he thinks raw material. As a young man trained in the visual arts, Silas cast about for a way to establish himself with materials and a studio on a low budget. "At college, I took classes in oil painting, metal sculpture, fibers, and glassblowing. But when I looked at the world around me, I saw tempered plate glass, aluminums, enamels, and resins. Those materials were abundant, but none were being taught in the institutions." This insight opened him to the possibility of using these materials to make art.

Initially, Silas avoided glass due to high start-up, and ongoing material and energy costs. "Even 30 years ago, it was obvious that things were changing. Czechoslovakia and India were producing glass that could compete with what came out of American studios. I don't think any of the artists I studied with in college are still making glass, because they couldn't keep the heat on."

In the waste stream of tempered glass from office buildings, Silas identified a source of material and patented a technology for working glass without heat. As environmental concerns mount worldwide, the value of his techniques to other artists rises correspondingly. "It is green in the truest sense of the word."

Silas' home studio was easy to assemble, since it has no kilns or furnaces. "The most expensive tool I own is an \$80 tile saw." The fact that none of his processes require heat reduces energy costs. The investment in labor is also minimal, since all his processes proceed quickly to finished output.

Developing a Technology

Silas' choice of materials is not obvious. "The primary technical boundary for the 50 million tons of tempered plate glass we produce every year is that it cannot be recut once made. That limitation amplifies the environmental cost of any mistakes in its manufacture. "The tempered glass industry gets away with a lot of green washing. It turns miscut glass into road crush and calls it environmentally friendly, but the amount of material, money, and energy expended to create tempered glass is incredible, so that solution just seems wrong."

Silas first developed a benign and simple *Silastial™ Glass* technology he dubbed *Silastial Shatter* or *cold bent glass*, which allows him to bend and shape tempered glass without heat. His technology exploits shattering, the weakness of tempered plate glass, to produce



Rick Silas, *Silastial Bowl*, hand formed cold bent glass, 16" x 16" x 2", 2016. Photo by Darcy Silas.



*Rick Silas, Shelter From the Storm, Silastial shatters encasing a 4,000-year-old wood bison, 15' x 15' x 15', 1993.
Photo by Patrick Kornak.*

a malleable, cuttable, durable product. He developed a few dozen ways of recycling the material in functional applications such as countertops, backsplashes, doors, and similar products, and patented his technology. Then he established a reliable supply of materials.

Every glass company has a stash of tempered glass they are reluctant to throw away. In Silas' experience, they will give away or sell that glass cheaply to avoid landfill costs. He has had remarkable success over the past 35 years sourcing such glass for free or for trucking costs. "Every week now I get a phone call with an offer of tempered plate glass." Most recently, a construction company had 2,800 glass sheets produced for a building complex in Victoria, British Columbia, that were 68 inches by 38 inches. One technical error rendered all of it waste. "I brought 300 pieces of the glass to my studio, and the other 2,500 sheets of lightly used glass were turned into road crush."

Technique

Silas' Silastial™ Glass technologies marries ubiquitous materials in unorthodox ways. "Everybody can access these materials. Liquid resins are cheaply available in hardware, marine supply, or automotive stores. Those materials have gotten better and stronger in recent decades, and I counter their biggest weakness, discoloration,

through the use of color and chemistry. My molds are cardboard sauna tubes that are typically used to roll concrete. As discussed, tempered glass waste is widely available for free." Silas shatters the glass to make Silastial™ Glass.

The industry already had one shattered glass product that involved laminating two sandwich sheets of glass and shattering a center sheet between them. That method works fine on a small scale, but slight warping occurs on larger projects. While it produced an attractive fractured crystal effect, that technology did not give the artist control over patterning or design.

Silas' innovation was covering the outside of the sandwiching glass with a temporary membrane to hold everything in place. He infuses a small amount of liquid resin, averaging half an ounce per square foot, and shatters the glass while the adhesive is still wet. The vacuum created by the force of the strike sucks the resin in to fill the cracks around the shattered glass.

He experimented with additional sheets of glass between the sandwich sheets, creating thick marble-like slabs that can be molded, cut, sculpted, and polished. At the suggestion of his artist wife, Silas introduced leaf patterning and other natural design elements, which are affixed by the temporary membrane and incorporated into the slabs.



When the resin is in its container, workers have 20 minutes to use it, since glass slows catalysis considerably. The artist has about two hours to manipulate, bend, and mold the material into the desired shape. After that, Silas can use power saws with diamond wheels or a waterjet to cut and polish the object. He uses the resulting Silastial™ Glass in all manner of flat and curvilinear applications.

The material is not thermally conductive, since heat is caught by a single chip rather than being transmitted through a crack or concentrated to explode as it would with tempered plate glass. Since glass is a wonderful heat sink, countertop surfaces made from Silastial™ Glass are not damaged by hot pots and pans and are perfectly flat. Due to thousands of complex vertical and horizontal bonds from the shattering, the countertops are also very strong. "Silastial™ Glass is a fabulous medium. You get the advantage of plastics with the strength and sparkle of glass."



(Top to bottom) Rick Silas, Silastial Shatter Countertop—
Lit from Within, topaz blue, single cut (no joinery) with
Organic Edge, 9' x 4' x 1-1/2", 2015; Silastial Shatter
Tabletop, cold bent glass base with clear Ice Glass,
Organic Metallic Edge, 36" x 40", 2013.
Photos by the artist and Darcy Silas, respectively.

Technological Leapfrog

Generally, Silas observes that technology leaps forward in response to a client presenting a problem with solutions that can be elaborate or as simple as hiding the view of a garbage bin outside a window. Silas enjoys identifying the complexity involved in a solution: How will materials respond over time to ultraviolet rays and temperature changes at the window? How best can light be maximized? What artistic solution will be most appropriate and pleasing to this unique situation?

Another Silastial™ Glass medium is one in which Silas uses a diamond grinder to etch drawings onto tempered plate glass. Some of his etched installations are massive. He has turned some productions into performance art, even etching a 50-foot glass mural while an audience watched.

"These days I'm also having fun with LED lights. In working with resins, a lamp radiating heat at a few hundred degrees damages materials over time, but since LEDs generate no heat I can build light into the piece as I form it. I incorporate glass lights below countertops so the counters themselves become the light fixture. I am now working on a 6-by-10-foot shattered glass tower that is lit from the bottom with LEDs. Clients and designers love the effect."

Several years ago he developed a product line called Night Ice, designed to consume the waste material from his own processes. "I gather shattered material chips, anything that falls away from my sculptures. Then I put them into a cement mixer, tumble them to break off any sharp edges, and add resin to glue the shards together to make candleholders." Once cured overnight, the vaguely stalagmite-looking objects sell from \$20 apiece.



(Top to bottom) Rick Silas, *Silastial Shatter Countertop and Backsplash, Ice Glass on cabinet doors, cut with tile saw, 2014*; *Mist Fantasy, reverse Ice Glass painting on reclaimed tempered glass, 24" x 30", 2010*. Photos by the artist and Darcy Silas, respectively.



Silas estimates that 95 percent of his work is commissioned to be installed in a specific location, many out-of-doors. As such, color, temperature variations, and chemistry become important design variables. Location affects both the technologies and materials that are appropriate for a given installation. His enthusiasm, satisfaction, and skill with working through solutions to clients' problems have allowed him to earn a solid living as a working artist for more than three decades.

Current Applications

Silas turns out a steady stream of Ice Glass paintings, light fixtures, bowls, coffee tables, countertops, doors, divider walls, sculptures and light towers. An installation titled *Undercurrents* represents a kelp forest under water. For one Calgary, Alberta, hotel Silas filled a lobby and elevators with shattered glass on mirrors. "That truly was a great example of upcycling waste material."

The artist's largest piece to date was *Shelter from the Storm*, a 15-foot cube glass sculpture of a glacier encapsulating a 4,000-year-old Wood Bison skeleton. The artist made it under commission for Sunlife Office Towers. He says the Sunlife sculpture is possibly the biggest freestanding glass sculpture in the country.

Silas produces flat sheets of Ice Glass and shattered glass that he sells to artists and designers from \$100 per square foot. "I considered opening a small factory to produce more of the material, but at my age, I am more interested in passing on technology than establishing a production line. An owner of a London glass company paid me \$20,000 for a week of training to teach him my process. Now his glass company is producing countertops using my Ice Glass technology on a factory scale."

The Arc of an Artist's Life

Around 1985, during recuperation from a surgery, Silas began to play with making jewelry using resins. That experience ignited the flare of insight from which the first of his Silastial™ Glass technologies would evolve. "Poverty drove me. The abundance of free tempered glass provided my opportunity, and the work is not hard to make or hard to sell."

Silas' life plan was founded in early formal arts education. Midlife development of user-friendly technologies provided him a livelihood as an artist. Now he looks ahead to retirement as a phase focused on teaching others his techniques. His students have tended to be both young artists and retired people looking for a hobby as well as companies wanting to introduce a new glass technology. "Once they learn the basics, students go off on tangents I've never imagined."

The most exciting venue Silas sees for transferring his technologies is through Webinars, which he expects to start offering through *Glass Art* in June 2017. "I thought at this point in my life I might have to create a retreat or join some institution where people come to learn." But Webinars fit perfectly and require far less investment by both the instructor and the students.

"Webinars open doors to so many people at reasonable prices and allow me to teach as many students as possible from all over the globe. The opening to do Webinars is the most opportune thing to arrive in my life lately. I don't like traveling and am not fond of airplanes. Vancouver Island where we live is a high-cost resort and retirement area, far away from large art markets, but Webinars make the whole world smaller." Since Silas and his wife Darcy and daughter Kashmere are soon planning a cross-country move, Webinars have the added advantage of portability.

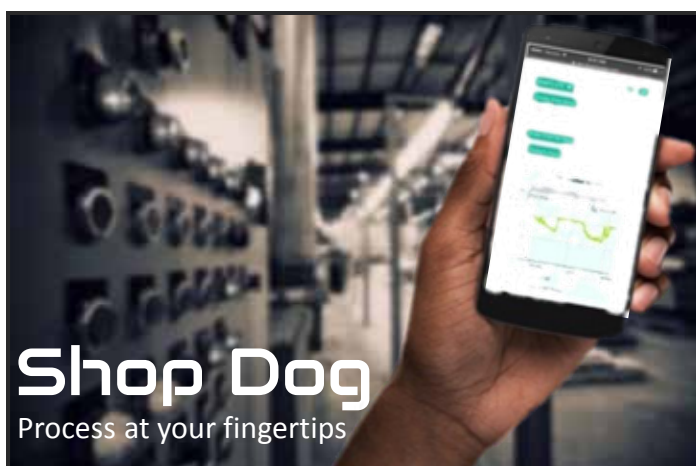
The Webinars that Silas now has in the works will focus on his various base technologies, starting with Ice Glass and the addition of color and three-dimensional printing in artwork on tempered plate glass. The artist says his techniques were designed to be easy to teach and pass on. "Once someone learns how to do this, it can be a wonderful ma-and-pa business. It has been rewarding to see how many young people want to learn this technology as an alternative way of earning a green living. And I can attest that I certainly sleep easier without feeling guilty about how I earned my own living for the day."

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Rick Silas, Pine Branch (detail), hand etched on reclaimed tempered glass with 4" grinder, 2011. Photo by Darcy Silas.



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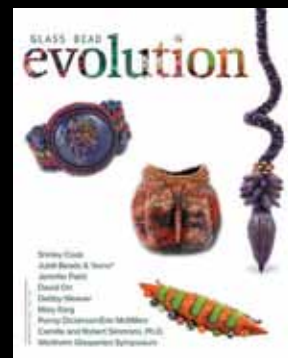
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