

Christopher Ries:
Sculptor in Four Dimensions
(Length, Width, Height and Light)
By Debbie Tarsitano

"We all think about light. Glass embodies it. Glass is the one medium that gathers, focuses, amplifies, transmits, filters, diffuses and reflects it. It is the quintessential medium for light. I see it all on a symbolic level." -- Christopher Ries

Many artists like William Morris and Dino Rosin sculpt hot glass by gathering and shaping molten crystal. Hot sculpting is quick and intense, and produces flowing, free-form sculptures. In contrast, sculptors like Christopher Ries, Jonathan Kuhn and Steven Weinberg, who work cold glass, sculpt their material in a more leisurely and deliberate manner to produce defined, precise forms. The hot glass sculptors must work quickly, while sculptors of cold glass may revisit and change their designs over time.

Christopher Ries, a master sculptor of cold glass, employs the discipline of "classical reductive sculpture." Ries hand carves massive blocks of glass to create his exterior shapes by taking material away. His work is physically and emotionally demanding, because his sculpting must liberate a dynamic, striking work of art from a lifeless block of crystal. However, the fact that Ries' sculptural material is some of the purest optical crystal manufactured in the world today, lets him add an additional presence to his work.

Ries' use of light as a primary material for creating art sets his work apart from other hot and cold glass sculptors. His designs harness the energy of light to drive illusions. Visions of living flowers and soaring gothic arches inhabit the interior of his sculptures. The designs within the piece often appear to be larger than the actual size of the glass sculpture that surrounds it. This effect is what Ries refers to as "the fourth dimension" in his work.

He shapes, smoothes, polishes and grinds the exterior of a mass of crystal, to transform it into a conduit for its interior light, producing optical masterpieces within. Facets and surfaces on the exterior of Ries' works reflect inward, forming light into abstract designs deep inside the sculpted glass.

The clarity of glass and unexpected illusions contained within, create an intense artistic experience and sense of wonder in viewers: how did he do that? Ries' vision and innovation in contemporary sculpture combines light and glass to form sweeping and precise designs in an illusory fourth dimension. Each work provides an exceptional sculptural point of view on the life of light within glass.

When artists think of the use of light in art, we usually think about painting. The term *Chiaroscuro* is used in art to describe the contrasts and forms created by illumination, between light and dark areas.

Traditionally light has been used in art to create the illusion of dimension. A painter uses light and dark to render a three dimensional object in two dimensions. Ries integrates the idea of Chiaroscuro by creating a fourth dimension of light and dark within each sculpture.

In Ries' work, viewers become explorers navigating through the piece discovering deliberately positioned illusions. Each design leads viewers to places of curiosity, sensation and drama. Yet, in conversation, Ries humbly explains that what you are viewing is all an illusion.

Ries has a 25 year association with Schott North America in Duryea, Pennsylvania. He began by purchasing glass from the Duryea facility in 1980 and came to work informally at the plant in the summer of 1982. In June of 1986, Ries formally agreed to work under contract with Schott in a partnership role. He has enjoyed a 21-year relationship with the company which includes his own sculpture studio inside the facility.

Francis Mahon, manager of ophthalmic accounts, has worked at Schott for 35 years and in the same facility with Ries for over 15 years. Mahon joined us early in the interview and gave a little background on this unusual arrangement between a studio artist and a major glass factory:

"Dr. Franz Herkt was President of Schott North America for over 20 years. Herkt was an unusual person with a unique perspective on business and art. When Dr. Herkt met Christopher Ries he was so impressed he decided to invite him to be an artist in residence. Herkt and Ries had a symbiotic relationship. Herkt recognized talent and through Schott provided marvelous optical glass and equipment giving Chris a way to take his work to the next level.

It has been amazing for everyone here to watch Chris transform our optical crystal into sculpture. I have watched Chris from the beginning creating simple sculptures, which over the years have

evolved into complex masterpieces. He is constantly taking his work to the next level. It has been our pleasure having Chris with us, and it has enhanced the experience here for everyone."

Ries took me on a tour of his work areas at Schott. Schott is definitely a factory setting. The work areas are industrial and not for an artist seeking intimate space with comfort and warmth. Ries has a semi-industrial private office/studio where he plans his designs and makes and receives calls. I would not call this space cozy, but it is quiet and less formidable than the row of huge mills and glass-cutting and grinding equipment just outside his door. Off in a corner of this windowless space is an area where he can quietly create the most delicate details in his designs using hand held diamond tools. A door leads to an adjacent main work area, a polishing room, where he hand finishes his work on polishing machines of his own design.

Beyond Ries' office in the factory area, the large-scale industrial cutting space is noisy, busy and cold (it was snowing briskly outside the day of this interview). The long clean aisle is lined on both sides with huge, well-cared for machines, many of which were busily at work creating the largest of cuts on massive pieces of crystal. At the far end of the aisle stands an enclosed booth where Ries and his assistants grind and hand sculpt the exterior of their large scale works. In all, this is definitely a serious work place, suitable for creating the most ambitious designs with high quality.

As we toured the facility, Ries explained how he used the specialized machines in his work.

DT: Tell us about your style of creating sculpture?

CR: I carve and release the form by subtraction using classical reductive sculpture techniques. This is in contrast to working hot glass, which is a plastic medium. When it is hot you can add to it like clay. Releasing a form from a solid block is all subtraction. The process of creating sculpture is quite simple: envision a form and carve it. Predicting what will be of interest to others is the hard part.

DT: Why have you remained at Schott?

CR: The reason I have remained with and respected Schott all these years is that they are peerless in the production of optical crystal blocks. It is the ultimate material for my work.

DT: You seem to create and innovate upon your own tools. How did you acquire this ability?

CR: I had a tool room pass at the University of Wisconsin. I spent hours and hours on weekends and evenings building machinery. I think most artists are faced with a dilemma; they find themselves in a situation where they have an idea they want to produce, but don't have the equipment to do it. At that point you either compromise your idea or build your own unique tools. I may be somewhat unique in that regard. I don't know too many graduate students that built a full grinding and polishing glass shop while they were in college. I also gained insights from being Harvey Littleton's personal assistant (his last one at the University of Wisconsin). He had Turner lathes, English polishing lathes from the old cut glass days when they were originally used, for cutting light weight hollow ware or small pieces for production.

I wanted to design a machine for large work that would have more versatility. At the time, I was working big heavy pieces with difficult shapes. It takes physical force to polish large pieces, and the machines commercially available did not have enough torque. They would stop and slow down during the polishing process.

So I designed a machine with extra long shafts, just the right height, with a five horse power motor so that two guys can work on either side of the machine with massive pieces while pressing their body weight against the wheels.

Ries walked me over to the type of machine he had just been talking about -- a very large two-wheel polishing lathe at the far end of the polishing room.

CR: I created this machine, and this unit is the third version of my design built here at Schott. It is one of a kind and built to last forever. The machine has two large polishing wheels; one is made out of horse hair, the other lamb's wool and felt.

Next, Ries guided me into the large main grinding area of the factory where he pointed to another large machine, a 60-inch table for grinding massive blocks of optical crystal.

DT: Is Schott the only company that has this type of equipment?

CR: There may be other places to find such machinery, but Schott has the unique combination of being able to create and provide the finest and largest variety of shapes, colors and sizes of pure optical crystal and also the machining capability to finish anything they produce.

We moved on until we were standing in front of two gigantic crystal glass castings polished on both sides.

DT: Tell us about the two massive glass castings before us?

CR: I love to gaze into the massive castings; this is part of what seduced me about glass. I begin by seeing and being inspired by the giant glass. These are wonderful pieces. For 25 years I have been grinding and polishing these things, and then cutting into the form. I have also displayed the large castings in museums uncut, for the wow factor. It is fascinating for people to see where the work comes from and to experience the natural beauty of the raw material. These large castings are called boules.

DT: How do you slice such massive and thick blocks? (About half way down the factory aisle a wire saw is smoothly cutting through a big block of optical glass.)

CR: We use a wire saw. This machine cuts glass using a 550-foot-long steel wire lubricated by water and slurry made of silicon carbide. The saw cuts at three millimeters per minute, so it may take up to 5 hours to slice a big boule. A saw like this has an advantage as the water keeps the piece cool. The sawing process can produce a lot of heat with a conventional blade. Interestingly, every three days the wire has to be replaced because the silicon carbide wears it away as it cuts the glass.

From the saw area, Ries walked me to a brightly lit room-sized wet grinding enclosure. A large flower form, at least 40 inches, was sitting in the center of the booth where two of his assistants were working on it.

DT: Where do you sculpt your work?

CR: I have a special air tooling booth. This is where I grind all of my sculptures into rough form. I use a pneumatic diamond tool to carefully take away material and define shapes. It is all done wet, which requires a mist collection system and floor drains.

DT: Share some inner thoughts. How would you like people to perceive your work?

CR: My work is based on glass and light. We are living in the photonic age, and most people don't know that or know what that means. (DT: Photonics, which is a technology associated with fiber optics, refers to generating, controlling and detecting photons of light.) We are all aware that light is changing the world and is used in laser surgery, bar code scanning, fiber optics, telecommunications, GPS systems, laser applications for military and scientific use. Photo voltaic glasses are coming into widespread use to convert sunlight into electrical current. All that we know about the universe, the composition of the stars, and the distances within the universe is studied through light. When you are looking at the very small or the very large, light is the tool for measuring what we are observing. Light is used in the medical arts to heal and further mankind's understanding of nature and the world itself. Scientists are trying to harness light to induce fusion in the laboratory. The National Ignition Facility, Lawrence Livermore National Laboratory has a large piece of my work featured in their lobby as it symbolizes the relationship between glass and light.

DT: Why pick glass and light to translate your ideas into art?

CR: I see optical crystal in its purest most beautiful elemental sense as being symbolic of the age in which we live. I love the metaphors, the illusions and allusions that come from light. There are so many illustrative phrases in our language from our daily lives: "To see the light;" "The light at the end of the tunnel;" "The light in your eyes." We all are familiar with light as a metaphor for good. Knowledge itself is linked to light by the words enlightenment and luminaries. Glass is a vessel for light. It is the one medium that gathers, focuses, amplifies, transmits, filters, diffuses and reflects it. It is the quintessential medium for light. I see it all on a symbolic level.

DT: The factory environment at Schott is very distracting; where do you go to collect your thoughts?

CR: I have a special place where I reflect upon my work. It is my barn, which resembles a Quaker meeting house. I purchased the property in 1992. I like construction and have restored the property myself. It is an old barn that has a stone stable below where I have my workshop. The barn is bordered by the Susquehanna River in the front and a stream at the back. The threshing floor is my gallery. The loft is a guest facility. It is such a contemplative space it is almost like being in a church. I retreat to this space to collect my thoughts. There are deer and wild turkey to inspire me.

DT: Contrast the two work spaces for us.

CR: I feel the need to get away from the intensity of the factory setting. I can do that by going to my farm. At Schott, the culture places high emphasis on the use of time and the allocation of space. It is a business environment; the farm is a creative spiritual retreat that everyone needs in order to think and relax. Somehow the two worlds I operate in work for me. One sheds light on the other somehow, and they provide a balance. I need to feel the pulse of art and science. It is reality to have schedules; you really do need structure if you are going to accomplish things. I find that structure at Schott. Artistic license and freedom are translated to productivity through discipline.

DT: Are you content in your work and association with Schott?

CR: Yes, I am particularly proud of what Schott and I have been able to accomplish through our partnership. I am happy with what I am doing. I have a studio at Schott yet I don't work for Schott; I have always worked with Schott as an independent contractor and have complete artistic autonomy. Our collaboration is revealed in the quality of my finished artwork. I believe it has also been an advantageous relationship for Schott, from a public relations standpoint, as the technical quality of their glass is often inferred after viewing my artwork.

DT: Have you ever made your own glass?

CR: I used to make my own glass; I have a degree in ceramics from The Ohio State University. I used to make pottery and fell in love with glass in the form of glaze. I started to make glass for glass' sake in about 1972. I made a living by blowing glass for eight years, during which time I learned much about the material. I used caning techniques; under gathers and over gathers of contrasting colors decorated with cased precious metals and iridescent surfaces. It was a great time in my life. I had fun learning about the plastic fluid qualities and decorative techniques used in the production of hot glass.

DT: When did you turn towards transparent glass?

CR: At a certain point I focused seriously on optical transmission: the transparency of glass, what internal reflection was all about, how you can create forms that expressed light and energy through optical illusion, which is more metaphysical sometimes than physical. I got hooked, and that is where I spent my time. Stanislav Libensky spent his time exploring translucency in glass; I have spent my time exploring transparency.

DT: Where is your new work taking you?

CR: I almost feel that somehow I will curse my future by talking about what I am going to do. In general terms, I would like to do some work that is suitable for outdoors, pieces that don't rely so much on optics as they do form.

DT: Do you think more artists will support new visions for art glass?

CR: I think there are a few artists that understand the artistic and architectural potentials of glass. Most though, are still locked into the combination and recombination of historical design and technique. One of Harvey Littleton's favorite expressions was: "Technique is cheap." To that I would add, "Concept is supreme."

DT: What do you think about design today?

CR: That's like asking what you think about kids today. It could be said that the more design changes, the more it stays the same. There is design in all of art. Don't ever think that a great painting does not have design, even if it is random design, there is always an underlying foundation and elements in play that interpret the concept. In my work, angles, curves, planes and surface textures are designed to create composition through illusion, which is a statement about our virtual world.

If you look at my sculpture "Life," it has an engraving of the earth carved in the bottom of a thousand-pounds-plus egg. First, you wonder how the earth is floating in the center of the piece, but once you get past the magic and shock of the optics, the idea begins to sink in. The earth is floating like an untouchable sphere inside the egg, which is an ancient symbol of life, and it is also fragile. This piece addresses the fragility and solitary nature of our world and of life itself.

DT: We speak of "art glass," but do you think we have to make that distinction?

CR: It depends on what you are describing. If you are describing a form that has a function, I think that glass art, or art glass is an appropriate term, because it has the connotation of craft. One of the definitions of craft is that it has function. However, if you are describing something that is not functional, but evocative and contemplative that is based on free form and relies on formal aspects of art like balance, gesture, texture, volume, juxtaposition, color, conceptual content and composition, I believe it should simply be called sculpture.

DT: Tell us how your family has supported and inspired your work?

CR: Family life has tempered my judgment in many ways. It has forced me to prioritize my time and values. Colleen and I have been married for almost 20 years. She has always been actively involved in my business. Colleen often has insights into matters that are opaque to me, and I appreciate her perspective. My children are a source of energy and creativity. I have learned much seeing life through their eyes. It is widely understood that the observations of children can be profound, and I know that to be true first hand. My employees are an additional source of inspiration. They were chosen for their unique qualities; some for their drive, some for their skill, some for their business acumen, but all for their good nature. It is a pleasure to work with them, and without them, this work would not be possible. I truly have a blessed life.

I decided to ask Chris's wife Colleen what it's like to be married to an artist.

DT: What has it been like to be Chris' right hand?

CFR: It has been an adventure. Imagine, 20 years ago he was told there wasn't a market for the large sculpture. There is now. What do you say about a man that through burning desire has created his own reality against the odds? Having never read a positive thought or motivational book in his life, he embodies their essence. As Napoleon Hill said, "Whatever the mind of man can conceive and believe it can achieve." He has created a reality not only for himself, but for all of his successors. History will prove him to be a major force in the advancement of this art form, both aesthetically and intellectually. The hardest part for me has been having an ordinary brain while living with someone with an extraordinary brain. It has been challenging at times, certainly not your average life, but with great reward. I am glad I didn't miss the dance.

DT: Do you have any exhibitions coming up?

CR: There are always exhibitions in the future. My next one opens in July at The Dane Gallery (www.danegallery.com) in Nantucket, Massachusetts. For a complete listing of events and exhibitions, you can check my Web site: www.christopherries.com.

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Sunflower: The Process
By Christopher Ries

"Sunflower is a magical work of art which invites interpretation and examination. It represents an ultimate culmination of materials, technique and concept homogenizing into a singular iconographic design." Christopher Ries

The Material

"Sunflower" was carved from a three-thousand-pound piece of the world's finest crystal. This glass has an internal light transmission of 99.8%, a refractive index of 1.58 and a density of 3.23. This material is precious and expensive to manufacture. Its finished weight is 1100 pounds, and its manufacturing time was one year.

The process of creating "Sunflower" started in the platinum lined furnaces of Schott North America, where the finest batch ingredients are melted with sophisticated technical precision to create the actual glass. Once a thick round casting of this material is melted, the boule has to be annealed for four months in order to cool it to room temperature. This is done to minimize the stress in the glass so that it can be cut, carved and engraved without the risk of fracturing.

Once annealed, the casting is test polished on two sides and given a thorough inspection to identify any flaws in the material. This is an important step in crafting the sculpture. It ensures that the final sculpture has the highest level of quality possible, through the careful selection of prime material.

The Process

The actual shaping of the boule into the finished sculpture involves cutting the excess glass away with a wire saw, then carving the shape with pneumatic tools like stone carvers use. This process takes several weeks to complete. Once the form is finished in the rough carving stage, it must be hand ground by a sequence of grinding steps. Each step takes the surface to an ever finer texture until the piece becomes translucent and ready for final polishing. Final polishing was done by hand with cerium oxide. It is a very meticulous and labor-intensive process.

Once the form of “Sunflower” was cut, shaped, ground and polished, the decoration was conceived and various designs were laid out on the surface of the form using china markers. This was the fun part for me as there are infinite combinations of color and composition that need to be narrowed to one single unified design. The designing and engraving process took more time than the cutting, grinding and polishing of the form.

When the physical engraving was finished, the painting and coloring began. Underlays and overlays of fine oil paint were laid on in reverse order by comparison to working on canvas. For what you see is the underside of the surface you are working on. In other words, the image you create will be viewed through the “canvas” as it were. It is quite a challenge to render an image in this manner.

The painting is then covered in varnish and gilded with 24 karat gold, which in turn was varnished again for protection and durability. Interestingly, the paint pigments will remain colorfast longer than a painting on canvas for two reasons. The lead bearing glass will block out damaging rays of light and because it is painted in reverse on glass, no air is getting to the surface that is being viewed. These are facts to consider when pondering the potential longevity of this work of art.

The Creative Process

The concept of this piece came to me while lying in bed one night. It occurred to me that I could create an optical sculpture which utilized magnification, optical reduction and internal reflections to create an intriguing composition by designing a form with concave and convex mirrors with the subject or decoration in the “focal” point. I reasoned that a polished, truncated, inverted cone form would allow me to decorate the “bottom” with an image which could be manipulated by viewing through a concave surface over the top and by creating a wide curving “shoulder” on the form one could see yet another view of the bottom.

Interestingly, the inverted conical surface which joins the “bottom” allows a view of the reflection of the bottom of the form, off the polished bottom of the upper concave surface. I proceeded to make a one-tenth scale model and determined there were other fascinating serendipitous reflections which added to the composition. They are a joy to discover as you peruse the piece.

The Aesthetic

Although I have said much about the material, the labor-intensive manufacturing, meticulous technique and design concept involved in the creation of this sculpture, emphasis should be placed on the aesthetic and artistic force of this piece. I’ve witnessed numbers of spellbound viewers entranced by the mysterious, magical montage of luminous images which emanate from this sculpture. I have answered a thousand questions concerning how the sculpture does what it does. I have seen revelation and wonder written on the faces of excited people eager to understand the physics behind the effects. I have seen people brought to tears by the thrill of discovery as they make connections to deeper truths about life and the physical world as they contemplate this highly symbolic work of art. But the most satisfying result of viewer contact with this piece is the overwhelming number of people who have emphatically stated that “Sunflower” is the most beautiful thing they have ever seen.





