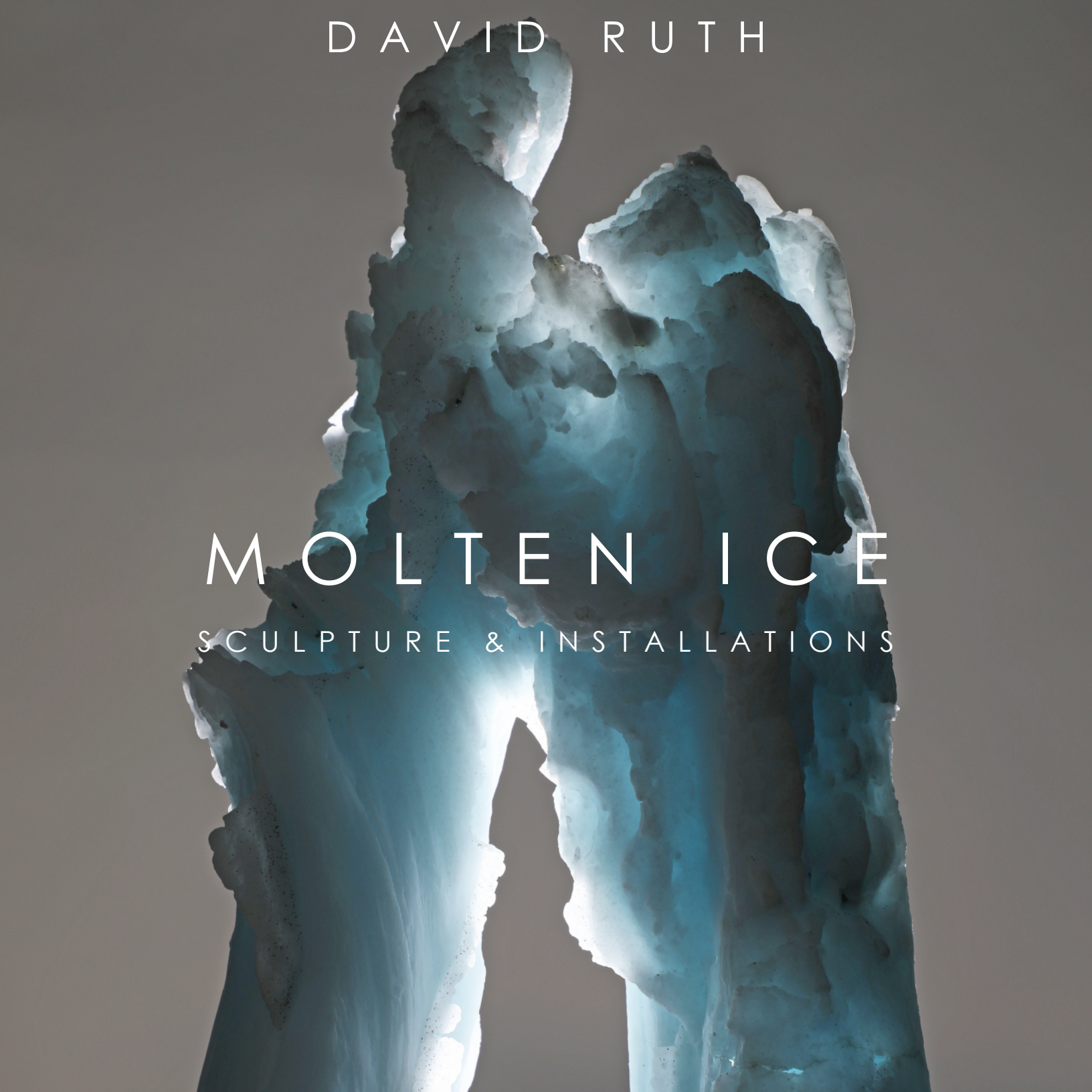
DAVID RUTH



MOLTEN ICE

SCULPTURE & INSTALLATIONS





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Molten Ice Sculpture & Installations

Author: David Ruth

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First Edition

ISBN: 979-8-9922546-0-0 (Digital Edition)

Library of Congress Control Number: 2024926966

Printed in USA

Editor: Tori Hermes

Essays: Pierluigi Serraino, David Wagner, David Ruth

Photography: Scott McCue, Brian Norman, Uli Golub, Art Quinn, Faisal Attrache

Artwork by David Ruth

This is a work of non-fiction. The artwork and text are the original creations of the author, except where noted. Any resemblance to actual persons, living or dead, is purely coincidental. The book contains high-resolution images of glass art created by the author.

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FOREWORD

Mining the expressive potential of a ubiquitous medium like glass is a ritual David Ruth has engaged in since his early exposure to Modern architecture at home. Donald Olsen, possibly the most committed architect to the tenets expounded at the Bauhaus, designed the two landmark houses David grew up in. The abstract character of that idiom offered a fundamental clarity where spatial articulation was assigned to the measured interplay of Cartesian forms, its materiality playing a secondary role in the experience of the enclosed void. In that environment David internalized in his adolescence, glass was a symbol of moral transparency, purposefully masked in signaling the porosity of Modern space. It was a two-dimensional veil of invisible presence, but inviolable to its assigned task.

The conceptual neutrality of Olsen's modernity was the backdrop for David's life-long exploration of glass as an active material, that is an authoritative agent in architectural space. In thickening its previously unquestioned width, he uncovers latent layers of richness partially tapped into during the pre-industrial eras so as to extend that past into contemporary time. While traditions of stained-glass have a long history in the arts and are tied at their essence to the figuration they are subordinate to, in David's hands glass is morphed into a three-dimensional matter exalting the complexities of the phenomena of light. By intervening in the fundamental structure of glass, its assumed vulnerability vanishes. Weight comes back and load bearing capacity is a regained attribute to a material long confined to surface as opposed to mass.

Plasticity is a quality hardly attributable to his chosen medium of artistic expression. And yet, in re-imagining the very process of





Pierluigi Serraino Is a San Francisco Bay Area architect, professor and architectural critic specializing in mid-20th century modern California residential architecture. Just published in 2024 is his book on mid-century residential landscape architecture, 'The Modern Garden' from Rizzoli. His current project is a publication on the Finnish architect, Alvar Alto.

how glass is made, David gifts the eyes of the beholder of beauty that is both novel and ancestral. The totemic proportions of many of his pieces trigger associations with monoliths whose mute communication strike deep chords in those viewers locked into the assertiveness of their presence. In the micro irregularities of those surfaces, unimaginable periods of geological times are projected into a synthetic moment, where the richness of Nature is apprehended in the enormity of its scale.

These artworks are generative of space around them, whether installed indoor or outdoor. They are by default foreground beacons of a counterculture unwilling to deflate its trajectory under the pressure of the generic of the industrial world. In regaining control of the very activity of making glass with purposeful interference to standard production, David forwards a healthy reminder that craft and industry can coexist only when the individual is at its center.

PIERLUIGI SERRAINO

ARCHITECT

AIA

Previous:
Pure Gede
2020
Cast Glass, Stainless Steel
55" x 25" x 14"
Photo by Pierluigi Serraino

Opposite:
Geologic Editions #3
2020
Cast Glass, Stainless Steel
64" x 14" x 10"
Photo: Pierluigi Serraino

GLASS IN ARCHITECTURE

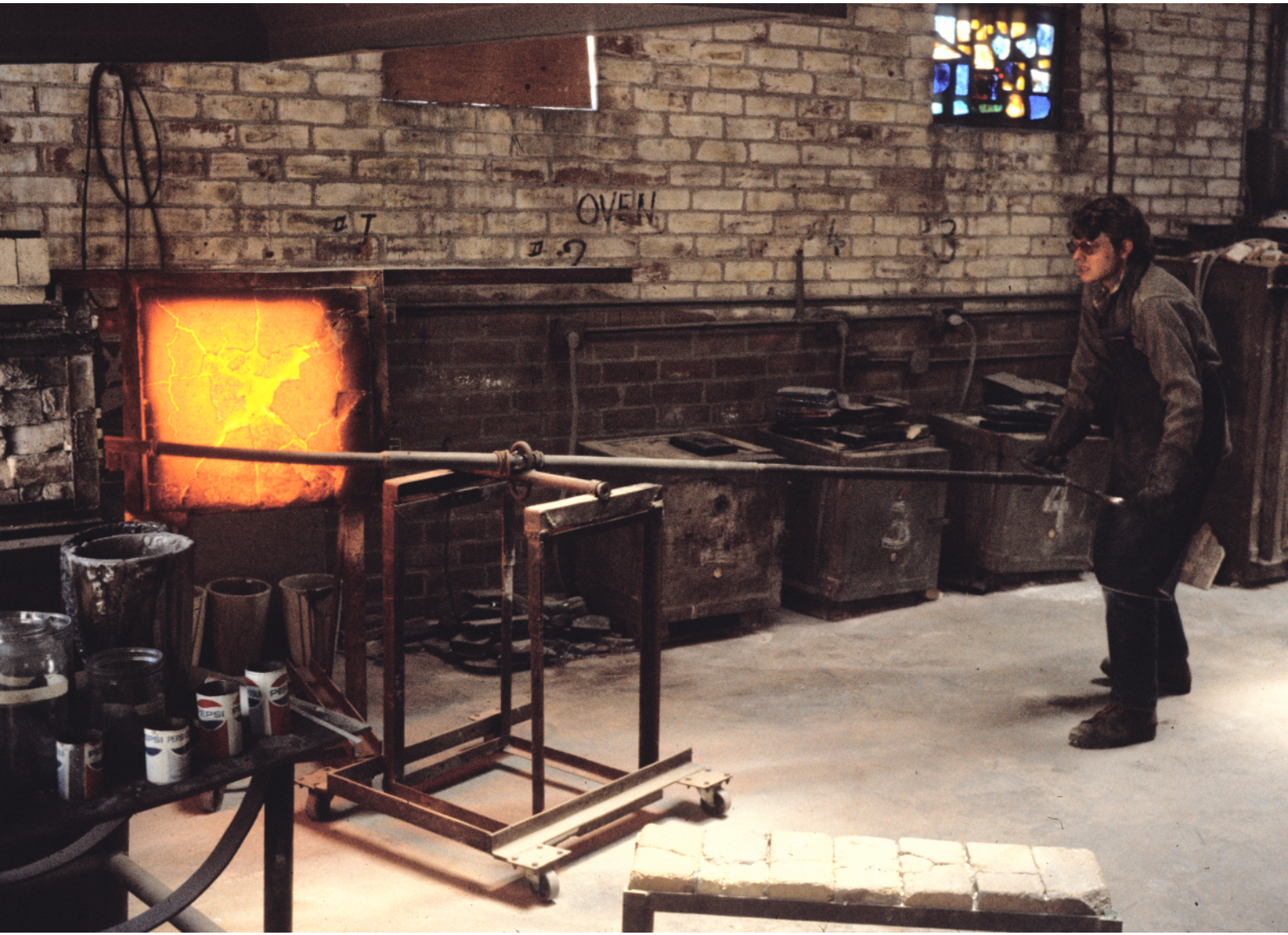
The guiding star of my life's work has always been a dialogue about the role of glass in architectural spaces, and more broadly, the interplay of light in our lives. From a very early age, I noticed that glass could transmit wonderful qualities, light, sparkle and color, especially when altered beyond the most ordinary into an artistic medium. For years I thought that colored glass in the environment could bring delight into our spaces. With architecture becoming unwelcoming of ornament, the art of glass could be itself, autonomous. Artistic expression using glass in windows and even more so in sculpture, would join the arts as a fully expressive and independent medium.

I loved marbles and jewels that were faceted and colored. It was so intriguing and paradoxical that a rock-solid material could let light through and, for instance, be bright red. In an arts and crafts class, I made a mosaic table using glass like small tiles—my first experience handling glass—at about age nine. My parents were urban designers, part of a community of architects, artists, and engineers. There was constant banter about the designed environment, light, space and structure, especially after we moved to a mid-century modern house. The architecture couldn't have been less decorated, so anything inside stood stark against the white walls and glass expanses. About ten years later, while in college, I met stained glass artists who produced tons of scraps that I recycled into new mosaics. I experimented along the way, making the mosaics transparent or embedding sheets of color into concrete to cast colored shadows in the negative spaces. But to display these, they had to be placed in the light like paintings in front of windows instead of walls. Later, I met other artists who were making what they called "autonomous panels," an ungainly

The guiding star of my life's work has always been a dialogue about the role of glass in architectural spaces and, more broadly, the interplay of light in our lives.

Opposite:
Colorado Cascade
Lower Detail/
2020
Cast borosilicate glass
22' x 20' x 4"




OVEN
PEPSI

term, but one that described what we thought was a new art format.

After college I met Roger Darricarrere, a Basque emigre from France who melted his own dalle-de-verre glass slabs in Los Angeles. Starting in about 1954, he might have been the first person to studio-melt glass in the United States for art making since Tiffany. Watching his furnace melt the glass was pure alchemy. Absolute magic! A little of this powder added to the batch gave this color, a little of that powder gave that color. I had seen the inch-thick glass dalles in books and even seen some church windows, but Roger was an innovator who gave me the sense that glass was an artist's medium. As I began to do some of my own initial experiments, some of my most creative discoveries followed. Glass turns out to be so multi-dimensional. It can be any color, density, opacity, texture. Later I discovered other properties like low expansion for durability, or high optics that multiply what can be seen inside the solid body, solid rock crystal. It is this totally artificial and human-made product, but the point was to enable producing art as with any other material. We looked for guidance to ceramics in that it too had been a craft material that had a revival and incorporation into mainstream art making.

Modern architecture rejected its "handmaiden," as it was once called. That's probably the best thing that happened to the art of glass.

I love how paintings can take your whole field of vision. The attraction of making windows was to do that with glass. But the conflict with architecture was such that other than in a few, mostly post-war European churches, most modern architecture didn't support an artistic conception of stained glass. Indeed, modern architecture rejected its "handmaiden," as it was once called. That's probably the best thing that happened to the art of glass. We were forced to make things that had their own autonomy, stood on their own, the same as any framed painting or sculpture in space.

Opposite:
David In Roger Darricarrere's Studio
1974



Off the wall, with only gravity as its setting, in the light, fully autonomous equals sculpture. Autonomous also means that glass can rely on itself resting in gravity for its setting, no need to be subservient again. The artist can be free to use all the tools that glass has to offer, as any sculptural medium- adding, subtracting, molding, form, texture and scale, plus specialized features like transparency, translucence, refraction and coloration. Except for how hard it is to manipulate, glass is a sculptor's dream!

When sunlight passes through transparent glass, it comes from one direction and mostly beams directly to the opposite side. This reduces the third dimension of any glass sculpture. I like to call my glass sculptures two-and-a-half dimensional, because that third dimension is somewhat compromised by the uneven travel of light through the material. Even shadows are sometimes not shadows, but lively colored moving pools of light. When the optics are smooth, and this holds true for both panels and sculptural forms, that "two-and-a-half" dimensional aspect erases some of the depth of the glass body. It's a phenomenon that can be confounding, but glass can feature transparencies that few other materials can match. Texture, color and translucency all contribute to the dynamic aspect of how glass can appear as sculpture.

Christ, Light of the World
Roger Darricarrere
1963
Glass window
42' x 10.5'

HISTORY OF GLASS

I am always curious about how things came to be the way they are. As student of history in college, I was drawn to the first chapter of any chronology. What happened before setting the scene? Glass history is specialized and fascinating. Discovered only once, unlike bronze, ceramics or even iron, it was first made into small objects in the Tigris-Euphrates Valley and flowed out along trade routes. It's quite ancient, a 5,000-year story of art, craft and industry. There have been periods of astonishing creativity, like the Roman period Egyptian era of fused glass bowls, where multiple colors were engineered to not break against each other. Glassblowing was invented about 50 A.D. That sparked another period of innovation in the Eastern Mediterranean, particularly in Venice, over centuries. The invention of plate glass or the development of color television tubes are also remarkable stories. However, now is the most innovative period in glass. Think Gorilla Glass or 10-meter telescope mirrors, but a lot of this is now outside the realm of art. Artistic use of glass is also at a high-water mark now. There are so many ways to work with this material, and unlike the past, the techniques are mostly open-source knowledge that is available to anyone for the asking. The most basic techniques were invented long ago. Our novelty as artists is to use glass as a new material in pursuit of contemporary ideas. For me, that has recently taken the form of concern for geology and its contemporary echo in conservation and climate. That Egyptian fusing era has been the guide for a large group of artists around the world using kilns to form their pieces in pursuit of never-before imagined artwork. Individual artists can access multiple techniques alone, in their own studios, giving rise to unimagined diversity. I have looked to industrial history to find places that have been

missed by the art world. Although not new, glassblowing, in its modern revitalization, has used a container making technique in the revival of glass arts for incredible artistic expression.

The history of plate glass is instructive. Originally invented for Louis XIV's Hall of Mirrors at Versailles, the glass was cast in slabs and laboriously ground and polished, then mirrored. That production was the start of the St. Gobain Company, today one of the world's largest producers of industrial plate glass. Because I was interested in windows as an artistic format, I wondered why two techniques couldn't be combined: Fusing multiple compatible colors into huge slabs, then grinding and polishing surfaces to make art plate glass windows that were modern in technique but held contemporary images made by hand. My window Regulus was my first major attempt at large polished glass slabs that were exhibited in a gallery. My artistic input occurred between the two polished plate glass surfaces. For myself, I feel like I reinvented plate glass as an artist medium and proved that I could take an aspect of the industrial history of glass to reinterpret the medium for contemporary expression.

Glass is a 5,000-year story of art, craft, and industry, marked by astonishing creativity and technical innovation.

Today, plate glass is floated as an extruded ribbon of molten glass on liquid metal, a process originating in England in 1959. Although beyond my current technical capacity and resources, I remain intrigued by the artistic potential of this method.

The plate glass inspired windows led to thicker and thicker sections, then fully realized cast glass blocks and sculptural forms. I entitled this body of work "Internal Life" for the internal markings inside the glass. The series expanded to include blocks where layered color and imagery was composed of streaks of color and bubbles for the inside the glass body. I felt that those marks were my story written in abstraction, my own internal life. The series of blocks exemplified by Holonga or the Standing stones GEDE



Initially assembled in 1992, (pictured above) *Regulus* was shattered in the 1994 Northridge Earthquake while in a show in Beverly Hills, CA. The piece was then reassembled and fused again in 2003 (pictured left). The crack pattern was preserved with fused glass lines of tiny bubbles.



Regulus
Above:1992
Right: 2003
Cast glass, steel
88" x 44" x 24"



Stones like Tega or Pura Gede have been the culmination of this work to date. One interesting aspect of these is where black glass lines entrapped in the block design mimic leaded windows. Only now the lines have become totally free as a drawing element when inserted in these three-dimensional forms and no longer a necessary artifact of crafting. The interior form becomes a three-dimensional canvas for expression.

The big blocks of the Standing Stones or Erebus, designed like stele of the ancient past, let my imagination run wild by placing vibrant glass "paintings" inside rather staid block forms. Like the standing stones of Western Europe, the markers of events or memorials in Asia, or the depictions of rites in Meso-America, my Internal Life pieces sought to become sculptural markers, an internal canvas for play and expression.

TONGATAPU

The Tongatapu Mural at a theme park restaurant in Japan was a collaboration with the creators of the park. This opportunity provided a sweeping view of the oceans and their rich life, as well as underwater optics. The 100-foot (30-meter) mural, composed of twenty-two polished glass panels in three sections, transitions from cool temperate waters to warmer, turquoise tropical tones, featuring a fantasy of sea life embedded in the 1¾-inch (4.5cm) thick glass. The front and edge polish reveal the interior space, which reflects the richness of the oceans that cover most of our planet. Big leaves of green seaweed in cobalt waters and dark blue shadow fish give way to an area of yellow and red seaweed. The far right depicts a coral cave with sea-creature-like folds and castings of bright and neutral coral colors. I encouraged my assistants to use

Opposite:
Holonga Detail
2005
Cast glass, stainless steel
50" x 12" x 16"





their own creativity to make “creatures,” resulting in a diversity of looks that mimic how the sea bottom actually appears and feels.

In 2010, a few years after completing the theme park project, I had the chance to sail with friends from Bora Bora, a South Pacific island in French Polynesia, to Tongatapu, the main island of Tonga. I finally got to see the tropical ocean in person and even stopped at islands I had named sculptures after, believing they were the most exotic places on earth. The coral environment at its best is fabulously rich with life: many shapes of corals, shades of fish, and wildlife of all kinds. Perhaps the most exotic creature I encountered was the manta ray. I even saw a black and white striped sea snake, which I had included in the Tongatapu Mural. However, at some stops, the coral did not look entirely healthy. Storms had come through, especially on Suwarrow, a national park in the Cook Islands. While the sculptural qualities of the huge coral formations were like a dream architectural fantasy, with deep spaces of arches and rooms in the center lagoon, the vibrant edge was clearly missing from the coral environment. The local Cook Islander rangers were puzzled by this phenomenon. I wondered if we weren’t seeing the beginnings of ocean acidification and water temperature rise reflected in the coral. I still wonder about the health of the coral now, more than a decade later.

Suwarrow is almost 1,200 miles from any population center, yet the beaches were lined with plastic: bottles, oil cans, shoes, fishing gear, and just plain trash. We gathered up some of it, but there was no alternative but to burn it and release the smoke into the air. Is this how we live on our beautiful planet Earth?

Previous:
Tongatapu
Tokyo, Japan
2001
Cast glass
100’ x 8’

Opposite:
Tongatapu Detail







EXPERIMENTING WITH GLASS

Various glass formulas provide different properties, many of which have artistic uses. Lead-crystal glass, for instance, contains a high portion of lead oxide, giving it brilliant properties when cut and polished. The high optic index makes lead-crystal exceptionally bright, especially when faceted. Formulas with extremely high lead content, above 70%, are even used in nuclear reactor windows. I once unpacked a shipment of scrap lenses and discovered, buried deep in a huge box, a stash of lead-crystal lenses from Schott, an international maker of raw glass. This prime optic glass was dense and beautiful, refracting light in sparkly, scintillating ways, particularly when polished. While the lead in the glass is chemically locked within the body, its toxicity has given artists pause. Yet, this material fascinated me. I experimented with lost wax casting using lead crystal, expecting the wax to burn out during the high-temperature molding process. However, traces of it remained, leaving a patina of black and white on the finished piece. The wax had chemically reduced the surface of the glass, mimicking natural patterns. This serendipitous discovery allowed me to echo nature's textures in my work, highlighting the origins of ice in a human-made material. Curiously, the clarity of lead crystal is not always its most ice-like quality.

This serendipitous discovery allowed me to echo nature's textures in my work, highlighting the origins of ice in a human-made material.

Our ordinary window glass, and most other glass we commonly encounter, are "soda glasses," the most versatile and easiest to melt. These can be made into almost anything imaginable—light, dark, rainbow-colored, black, white, and any shade in between. As the Internal Life pieces grew in scale and confidence—some weighing over 600 pounds—the sculptural presence of the material in space became undeniable. The work was ready to move outside, and I began considering how to make that

Opposite:
Gamage 3 Detail
2019
Cast lead crystal glass
25.5" x 15.5" x 12"

reality. The high-expansion soda glasses we were using had limitations when exposed to direct sunlight, especially in environments with significant temperature changes during the day. I thought about casting low-expansion glasses, which wouldn't crack when exposed to sunlight.

Before I went to Antarctica, I had started experimenting with Pyrex glass, a family of low expansion borosilicates that hold up well in the environment. These formulas don't expand too much in the sun and don't break when exposed to huge temperature differentials, such as hot sun after a freezing night. However, they are difficult to cast. One confounding thing about the low expansion Pyrex was that it developed white veils between the layers as it fused. I tried many ways to eliminate or work around this problem, but ultimately, I embraced it and used the look that it had. It was icy.

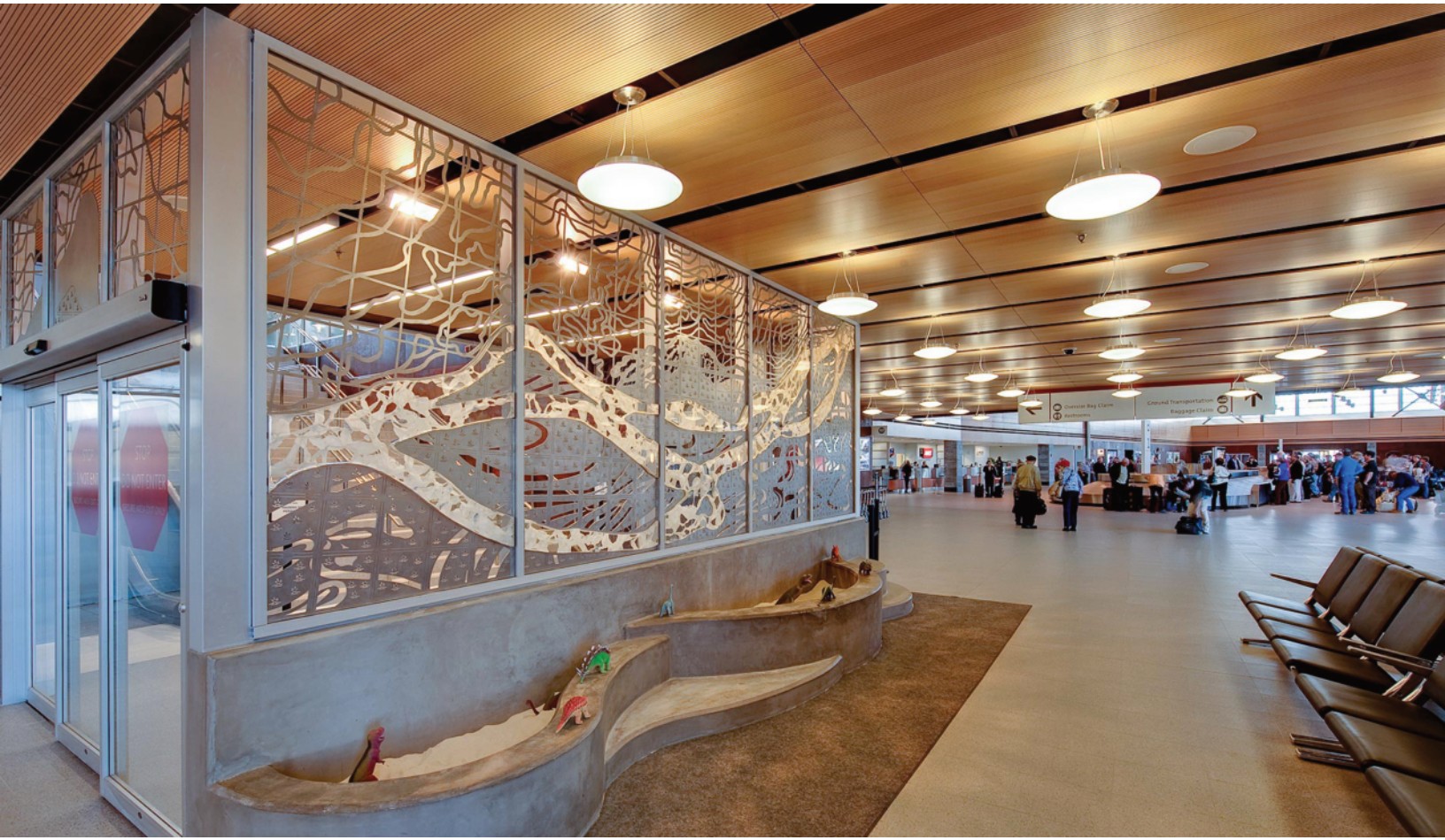
While looking for models of how to make the light marker sculptures, I came across some Tibetan flags outside a local Buddhist center, soaring shredded banners of white in the wind. Modeling on them, I made veiled glass shapes that were up to 10 feet tall. They were beacons for the changing light of the sun. In this series, outside, I saw something new in my work. Internal markings in the pieces entirely fell away as a feature. Even the overall form was less important than the light they captured from the sun. Truly light markers, the brilliance of their transmittance made light the primary concern, overwhelming even the forms. The resulting look was also cold and icy, which led to the next chapter of my development.



Light Marker Group
2005
Cast pyrex glass, stainless steel

Opposite:
Taga
2005
Cast pyrex glass, stainless steel
56" x 17" x 7"





TANANA FAIRBANKS

When I was asked to make a proposal for the new terminal at the Fairbanks, Alaska Airport, I suggested encircling the arrival security gate with a wrap of glass and metal that formed a contour map of part of the Yukon River Valley, which flows through Fairbanks. I chose the junction with the Tanana River and made the river sections in Pyrex glass. These northern rivers are ice-covered about half the year and part ice for a good portion of the rest. Low-expansion Pyrex, with its white veils, perfectly expressed this. The composition offered an opportunity to combine a data resource; a land elevation diagram with a representation of the frozen river in white-veiled borosilicate glass. Pieces were waterjet cut and assembled into panels that snapped into commercial frames. The effect was to offer an understanding of the place where you were now arriving: Fairbanks, gateway to the frozen North.

In addition, the architects were attempting to come up with a local Alaskan style of contemporary design, using readily available construction materials in a way that was suited to the cold and sometimes hot weather, but with a local style. Selections of artwork add to that localization.

Opposite:
Tanana Fairbanks
Fairbanks International Airport
Fairbanks, Alaska
2009
Cast Pyrex Glass, Stainless Steel







ANTARCTICA & CLIMATE

In 2006, I was honored to receive a National Science Foundation Antarctic Artists and Writers Program grant, allowing me to travel to Palmer Station, Antarctica. My project was to take texture molds off the glacier ice and stone. I molded pieces of icebergs from the Bellingshausen Sea to capture their textures. At Palmer Station, I cut sections of ice, setting them up as sculptures to observe as the sun circled the sky in the perpetual daylight of the austral summer. This experience became the foundation for many of my subsequent works, including Ice Head, Norsel, and Gamage. Compositing these natural patterns into larger forms, I found that glass, one of the most artificial materials, effectively captured the intricate randomness and deep time inherent in ice.

Palmer Station offered yet another lesson: it was obvious to everyone there, even in 2006, that the area was warming rapidly. The Antarctic Peninsula has experienced one of the most extreme temperature rises in the world. This was apparent in the receding glacier ice behind the station, which had been right up to the door when it was built in the 1960s but was a quarter mile away in '07 and is more than a mile away now, through sharp moraine. Every year on Anvers Island, where previously the Marr Ice Piedmont covered the shore and interior in hundreds or thousands of feet of ice, it is now retreating to reveal new rocky shoreline. Observing that the whole island's ice mass had decreased in height, Mount William was much more visible from the station than before. I saw how molding ice could be a channel for examining climate change while contrasting the terror of melting ice with the beauty of the ice itself. I am not immune to the irony of melting glass minerals to save the ice on

Rock Formation at Palmer Station, Antarctica
2006



David taking molds
Palmer Station, Antartica
2006



David cataloging Ice
Palmer Station, Antarctica
2006

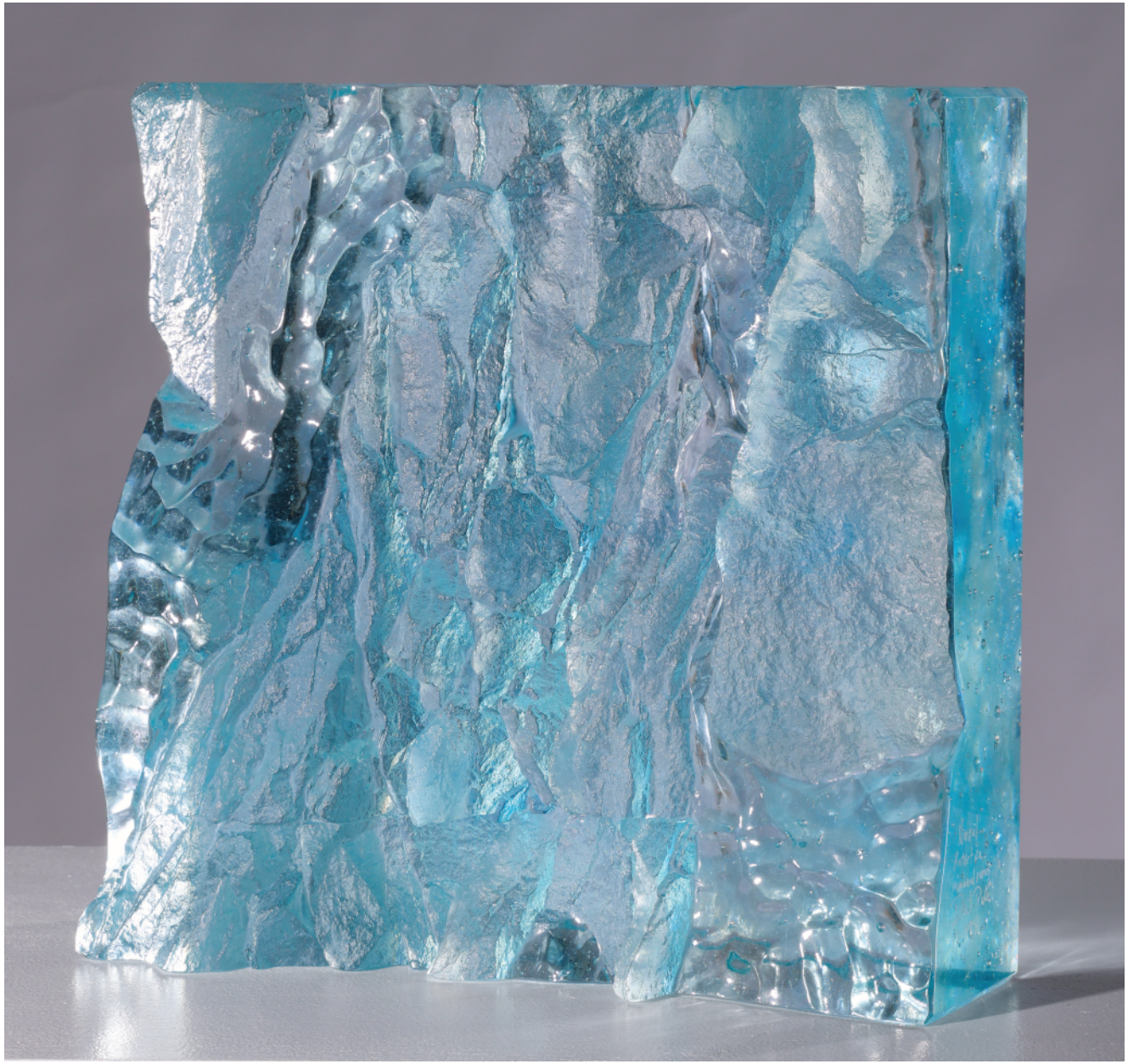
earth. Transmitting the experience of seeing that great ice sheet diminishing firsthand is invaluable in our current conversation. This was the beginning of a change in my thinking.

Returning from Antarctica, I was inspired to transform everything into the likeness of ice. This led to the creation of the Chill Project, aiming to evoke the beauty and ephemeral nature of ice. Palmer Station is one of the most beautiful places I have ever seen, with its floating icebergs and decomposing ice piedmont at the sea's edge. I discovered that eroded ice had only a limited number of textures, so I pivoted to rock textures, finding them more varied and suitable for casting into glass. Sometimes, the rock looks more like ice than the ice textures themselves, especially when transformed into glass. This approach of turning rock into icy cast glass has since guided my work.

Watching the ice and stone textures cast into glass, in sunlight, the geologic past comes into focus. The ice provides a stepping stone back into time, capturing the moment not so far in the geologic past that we can't imagine its formation. Even the most ancient ice features are not as old as most rock. Tens of thousands of years maybe, but not millions and even billions for stone formations. Watching the ice retreat, we are seeing the end of a geologic era. Massive formations of frozen water piled up in the polar regions of our planet are vanishing, as it once did from much lower latitudes, some in the time of human existence. Some have called it a new geologic age, the Anthropocene, age of Mankind with marked human effect on the melt. It is a profound shift in the climate of the planet earth. How we will adapt and change to accommodate the elevated temperatures remains to be seen.

I saw how molding ice could be a channel for examining climate change while contrasting the terror of melting ice with the beauty of the ice itself.

Opposite:
Norsel 2
2008
Cast copper & cobalt glass
17" x 17" x 6"



GLACIER LIGHT & COLOR

I had taken glass color samples to Palmer Station to see what color the ice really was– a whole range of blues. Interestingly, all the samples worked as possible colors for glass; none of them were quite correct. Ice is colored like the sky through the effect of Rayleigh scattering. Molecules of water bounce light around as it travels through the solid material, shifting the perceived color towards blue, rather than a pigmented color or a color ion, as is in glass. Suddenly all the forms I wanted to make were some shade of blue, favoring a particular shade of one of my favorites, a copper/ cobalt turquoise blue. I experimented with the colors of copper, cobalt, and nickel. One color I really love is a very light steel blue that is a mixture of nickel and cobalt. Nickel makes a brownish tone in soda glass. When balanced with cobalt, a very strong and distinctive blue, the color is grey. Lean towards the nickel, you get a smoky charcoal, and lean towards the cobalt, you get shades of steel blue. All of them look natural as a glassy stand-in for ice.

GEOLOGIC SCULPTURE

My long-term goal in glass casting has been to create fully three-dimensional automonous sculptures. This is complicated by molding techniques that require multiple processes and limit scale. Before my Antarctic expedition, I began a piece called Saloté, based on a piece of rotting tree stump augmented by driftwood, roots, and rocks. After years of molding and three attempts at casting, one version in lead crystal was successful. The initial attempt in light glacier blue glass devitrified, crystallizing and opacifying, which, while making the material brittle, still captured the glacier color and slight transparency

Opposite*:*
David with Color Samples
Palmer Station, Antartica
2006





I intended. Saloté exemplifies my vision of assembling diverse natural textures into a cohesive earth story, reflecting both human impact and the grandeur of our planet. Most of my texture molds tend to be flat, a byproduct of my background in glass panels, dalle-de-verre, and stained glass. Achieving texture in three dimensions has been challenging but rewarding. Early pieces like Gamage, incorporating five Antarctica textures, demonstrate this potential. Cold-worked after casting, the ice textures, especially when polished, contrast beautifully with the granitic rock, showcasing the intricate interplay between ice and stone.

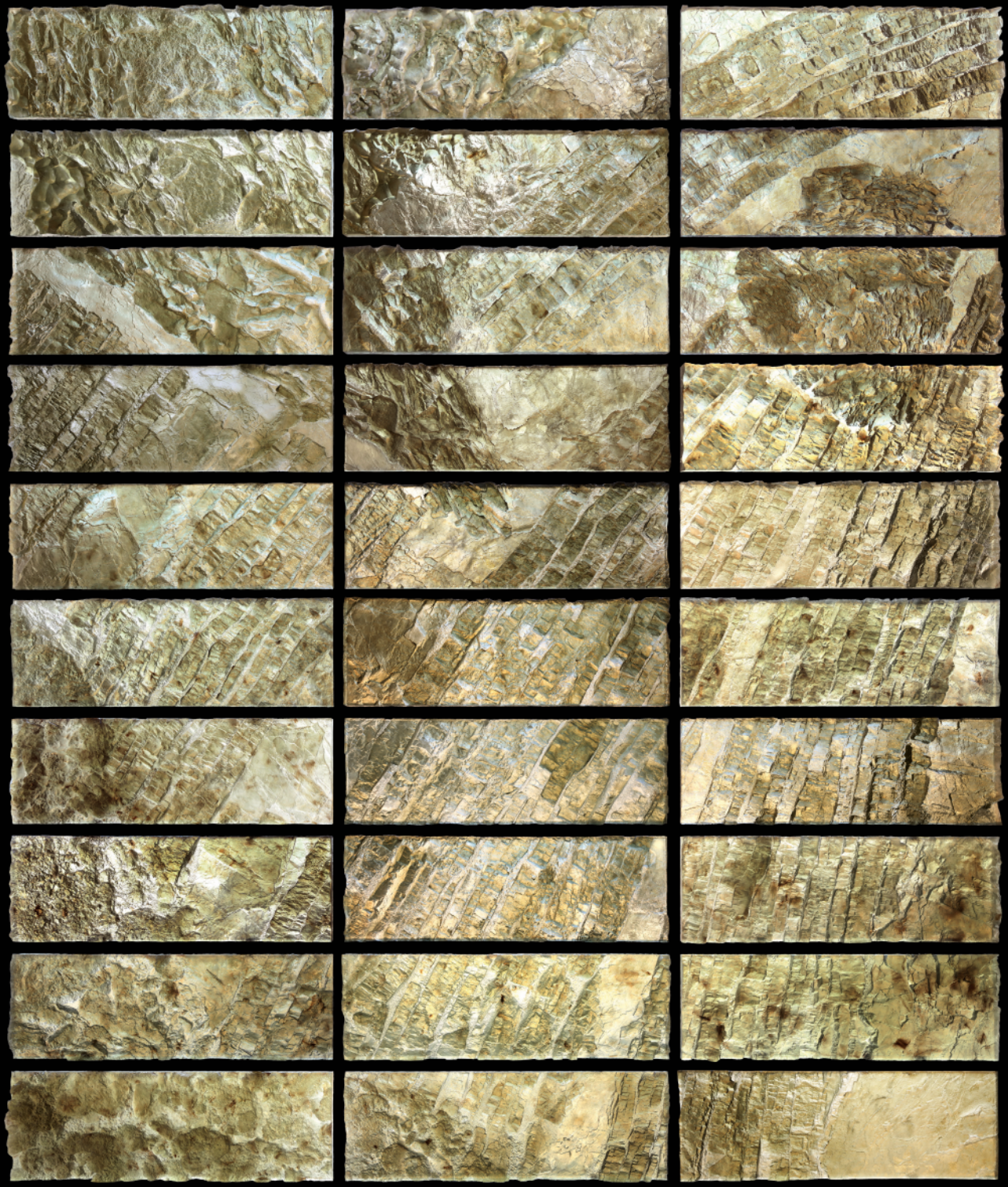
The idea of playing God by making glass rocks gave me a hint as to why people were so afraid of creative artists in previous times, usurping the role of God in creation.

OPTICS OF ICE

Of course, glass, the most artificial of materials also comes from the earth. Its components are mined, refined, mixed, and melted by humans. Gorgeous in its purest forms- but without remolding it loses that earth connection and becomes a material from outer space with no earthly grounding. In all my work, I like to provide that grounding connection by leaving parts of the original mold or reminders that this object did not descend in a vacuum.

When I later organized rock and ice textures for the Colorado Cascade window, I began to understand more deeply the power of creation. The idea of playing God by making glass rocks gave me a hint as to why people were so afraid of creative artists in previous times, usurping the role of God in creation. Maybe frightening but certainly invigorating! Even today, that ability to create where there was nothing makes for jealousy and resentment. Artists are not considered the gods of our society that they should be!

Opposite:
Saloté
2019
Cast glass
21" x 14" x 44"



COLORADO CASCADE

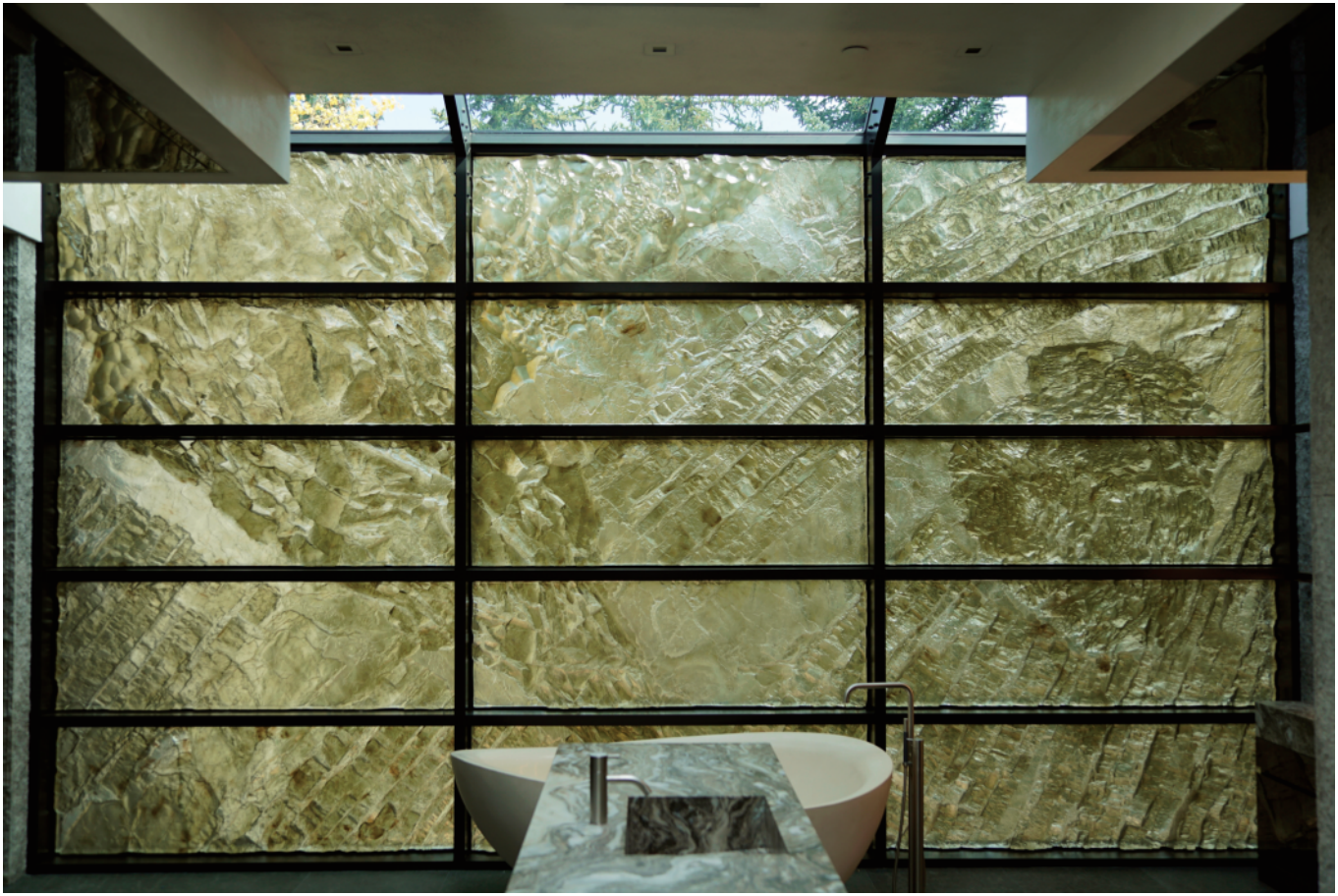
The Colorado Cascade commission was set in the Rocky Mountains. The clients specifically wanted a mineral color, not blue water or sky. The environment there is rich with minerals, and they chose wisely a charcoal color. Their choice made me expand the definition of what I was doing with ice. The Colorado window has Antarctica ice and rock textures mixed with chert and shale from near my California studio and several other textures, as well. The panels are charcoal brown, looking perfectly appropriate in their ski villa home. Some people have said it looks metallic or mineralized. Though brown has never been one of my favorite colors, I now have a new appreciation for its earthiness and its place in expressing natural phenomena. The richness of nickel is perfectly in keeping with the rich mineralization of the Rocky Mountains and the rock I have molded.

The sweeping geologic story told in the geologic texture of the Colorado Cascade window extends the history of materials in architecture by mimicking stone and adding transparency to a very traditional building material. The idea that such a solid stone-like material can be designed is a concept that is new, or at least underutilized in architecture. Plate and window glasses are accepted for their ability to enclose space without imposing any visual barrier. Glass can be so much more! Here is a transparent stone wall that fits into the most contemporary of buildings. It reminds us of stone structure of the past but allows the occupants to live in light, to live with an incredible geologic history beaming in with the light. Architectural spaces can glow, protect, inform and inspire all at the same time.

Opposite:
Colorado Cascade Composite
2020
Cast glass,
20.5’ x 18.5’



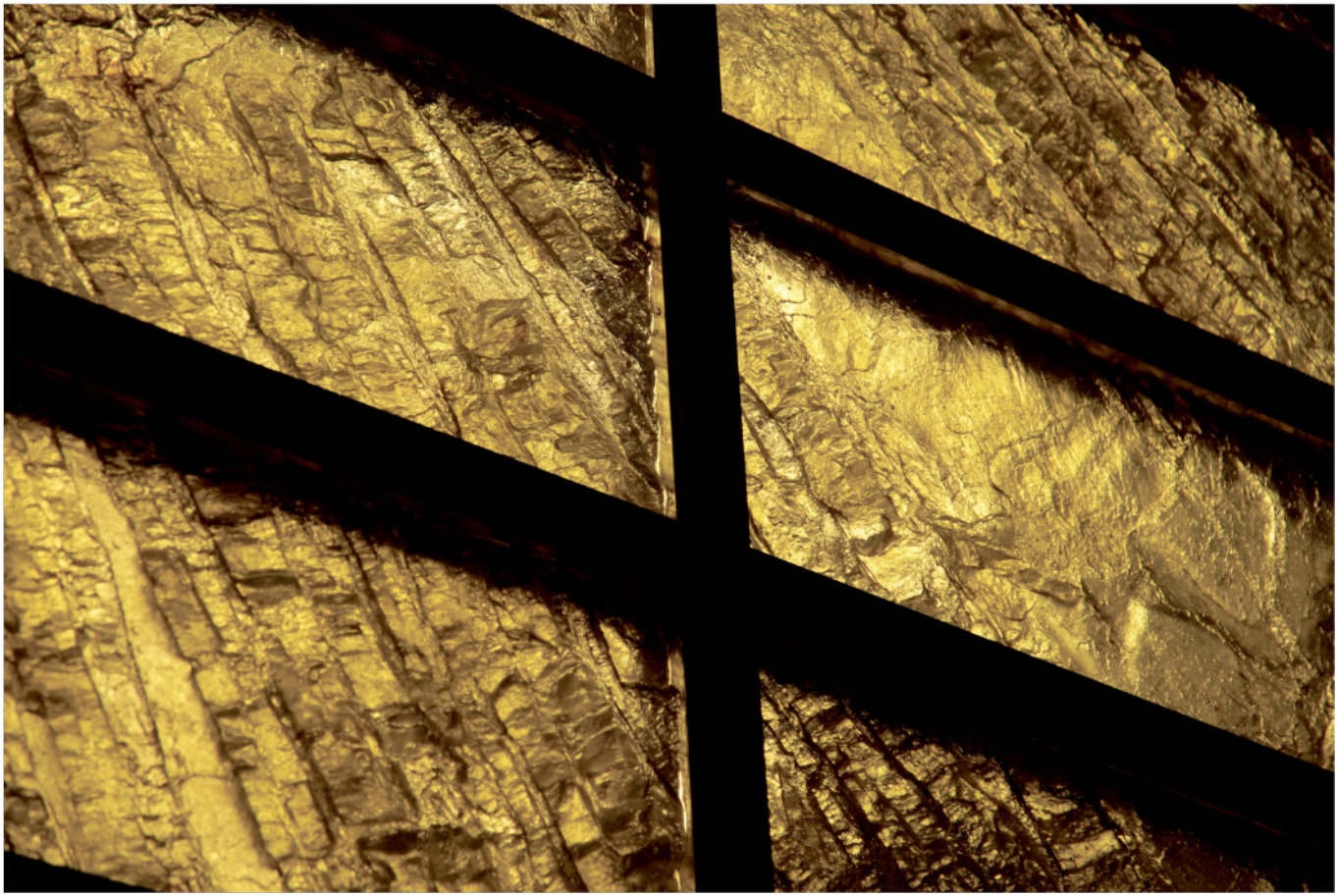
Colorado Cascade
Upper Ice Texture Detail
2020
Cast Glass



Colorado Cascade
Upper Section
2020
Cast Glass



Colorado Cascade
Exterior
2020
Cast Glass



Colorado Cascade
Exterior Detail
2020
Cast Glass

THE GEOLOGIC EDITIONS

The Geologic Editions are studies for the Colorado Cascade Project in texture, color, and composition. These smaller panels, produced mostly in series of five, plus an artist proof, gave me a chance to express the range of possibilities for the larger window. These small panels stand autonomously as sculptures. Watching these small pieces light up has shown how the sun plays on the glass and where the mind wanders when led by the changing light refracted by geology.

There are three color systems for these pieces. One is simply clear glass with a full-spectrum blast of white light. Skeptical at first that white could work with the intense textures, I found it works the best. The brightness and contrast of simple clear glass shows the ghost of geology and brings out the legacy of time. The second system involves copper blue. One of the first mineral colors used, this element harks back to the earliest days of human discovery. Even before the bronze age, the metal pigment was used as paint by native peoples. In glass slightly tinted with cobalt, no simple color quite grabs the imagination like turquoise blue. It's ice-like without being the color of ice, musical because of it association with natural forces.

The glasses from nickel and cobalt recipes turn from charcoal brown to neutral grey into steel blue. To me the discovery of these colors comes with the iron age and the ability to manipulate earth products at high temperatures. In the 5,000 years of glass making, these colors were there early on. But the ancient world sources of cobalt were quite remote. Some of it was a product that was transported on the silk road from central Asia. Cobalt glasses have an unrivaled ultramarine-blue



Embedded in each piece was the whole history of the earth, now inhabited by human beings.



Above:
Geologic Editions #6
2018
Cast glass, bronze
53” x 9” x 8”

Opposite:
Geologic Editions #3
2018
Cast glass, stainless steel
64” x 14” x 10”

intensity. Combined with nickel, the two yield many shades of natural looking colors, perfect for representations of ice and stone.

Each piece of the Geologic Editions tested some part of the project. Number 9 was the pattern of the original sample panel for Colorado, containing the boldest fractured edge of our chert formation in the hills behind Oakland. When I researched it, I found a picture of geologists in the 1920s standing at the exact site. The Monterey Formation surrounds the San Francisco Bay for a few hundred miles. Chert layers alternate with shale. In Southern Monterey County, the shale is fracked for gas. Both Geologic Number 5 and Number 12 are virtually all shale, as we found one huge vein of shale in the middle of the formation dominated by chert. Geologic Edition Number 10 is an edited section that juxtaposes the chert, particularly the single-layer smoother side, against the “rubble” of the “avalanche” in the Colorado Cascade window project. Wanting another texture for the avalanche, we used what we could grab: dug-up concrete from the yard, asphalt off the beach, bits of wood, sand, and random rocks, even a silicone trilobite I bought on the internet.

In 2021, I was invited to show the Geologic Editions at the Frank Lloyd Wright-designed Walker House on the beach in Carmel, California. As the tide and fog moved in and out, so did the daylight. While the Geologic Editions are not totally three-dimensional, as they are cut sections of relief panels, every mood was present and reflected in these sculptures. Watching them change in the sunlight was my clue to that aspect of layered time. Embedded in each piece was the whole history of the earth, now inhabited by human beings.



Geologic Editions #12
Cast glass, stainless steel
50" x 13" x 11"



Geologic Editions #5
Cast glass, stainless steel
22" x 16" x 8"



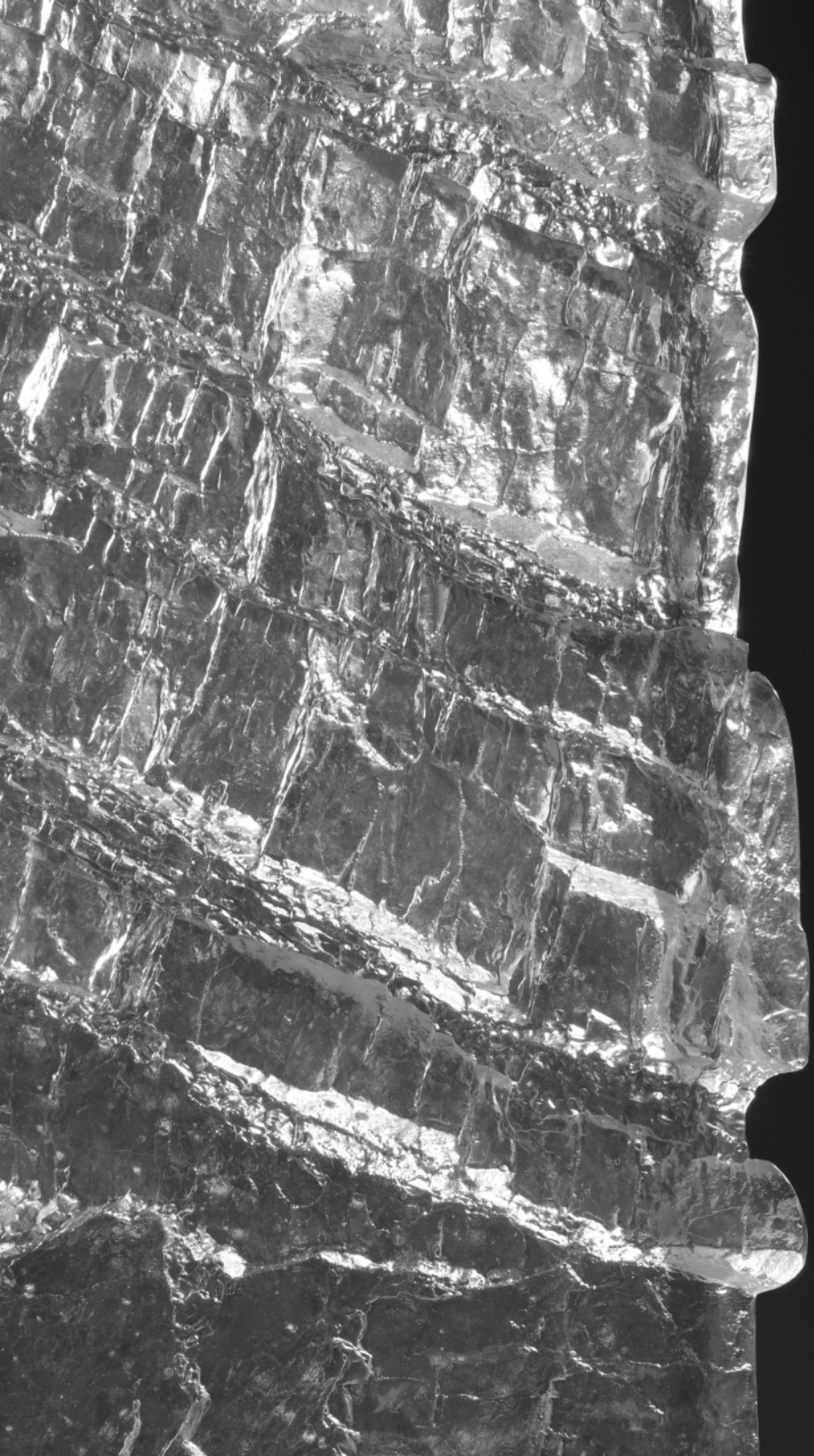




Previous:
Geologic Editions #10
At Frank Lloyd Wright's
Della Walker House
2021
Cast glass, bronze
28" x 23" x 8"

This & Opposite:
Geologic Editions #9
Cast glass, bronze
28" x 23" x 8"





LIGHT INTO TIME

Observing this work led me to another profound conclusion: the changing light of the day refracted through glass sculpture is a marker for the passing of time. With patient gazing, light becomes layered time in these works. Natural light changes throughout the day, year, and weather. The prisms in the chert rock fractures flash slow-motion scintillations that turn on and off as the sun passes. The glass making, mining the material, and the road cut are all on a human time scale. The rock stretches back into deep time

The changing light of the day refracted through a glass sculpture is a marker for the passing of time. Light becomes layered time in these works with observation.

A geologist observing our molding of the Monterey Formation mentioned that this chert took 10,000 years per inch to form on the bottom of the sea from diatoms depositing their microscopic shells. Those layers were compacted over millennia, then subducted and thrust up in the plate tectonics that is a prominent feature of our area. These local hills were volcanic 10,000 years ago, and the age of these hills is in the low hundred thousands. Even our great Sierra Nevada mountains are only about three million years old, all the result of plate tectonics. In comparison, the Chicxulub impact and the extinction of the dinosaurs were 70 million years ago, and so forth. Our road cut revealed over 100 feet of exposed layers, easily millions of years' deposits of fresh rock from the sea floor. These hills are young and, of course, still moving. We feel small earthquakes every few days. The earth's face has completely changed, maybe seven times, so the backward look implies changes that take us back to the beginning. Geology turns out to be the first chapter of that history book, setting the stage for human life. The geologic view opens toward an infinite past. Flashes of light through my glass textures show that layered view of time.

Opposite:
Wragg Detail
Cast glass, steel
13" x 32" x 12"

Next:
Penrhyn
Cast glass
11" x 21" x 8"





CAST PAPER

Another side venture from the Colorado Project was the introduction of cast paper. I have long enjoyed playing with other media to contrast the fractured brittleness and hardness of glass. Drawing, painting, and, much earlier, cutting cloth all give me a less industrial approach- if not the spectacular light of cast glass, at least relief from the sharp, hard and brittle qualities. Seeing my geologic patterns in cast paper adds another, more organic dimension. The evolution of worlds is still visible. The fragility of shale as a source of hydrocarbons is evident. In paper, light doesn't play with time in the same way but adds a hard/soft contrast, so the rock or ice becoming paper is a kind of paradox, like the transparency of solid glass becoming light, but here one that elucidates time in a contrast between rock and paper. The living quality, the organic origin of the paper, comes full circle to the living diatoms that died to form the chert rock, which is the foundation of the Monterey Formation.



Navarro
Ice Detail
Cast paper

Opposite
Navarro
Cast paper, steel frame
18" x 49







RAINBOW BRIDGE

The public art installation, Rainbow Bridge, for a new industrial building in East Oakland, is my demonstration of the power of the textured panels. In massive steel frames, outdoors, the seven panels spread over 60 feet. Rainbow Bridge is dedicated to both the diversity of our community and the refracted light that is transmitted through the rock and ice patterns. The original Oakland industrial base has been succeeded by a cleaner future. This was the site of an old General Electric factory that was left horribly polluted, without respect for the land or community. A new generation has cleaned up the mess and built a monument to a lower pollution future. In front of the building, my public art installation calls attention to the refinement of how to use the land without the toxic run-off. It shows how to have an artistic presence amidst a revitalized landscape for post-industrial production.

Watching this sculpture over the course of days and a full year makes me appreciate anew how the combination of geology in cast glass can have vibrancy in the light. Observed movement of the sun is immediate. You can watch the shadow move on the ground in a minute, and if you look carefully, the peaks in the relief alternate light and dark, scintillating in the bright day sun, or even illuminated at night. Time is literally of the essence!

Public art installations offer the artist a way that work can be sustained into the future. With so few showing and collecting opportunities available through contemporary institutions, particularly museums, public art offers the possibility of long term display and integration into the community and lives of viewers that is rare in other types of opportunities for artists. More civic organizations, governmental organizations and

Previous & Opposite:
Rainbow Bridge
Cast glass, steel
Oakland, CA



particularly private developers have encouraged public art. Percent for the Arts funding has benefited artists and their communities by making artwork ubiquitous in public spaces. The most wonderful result of having the work seen in public is the feedback over years. Nearly twenty years after the Installation of the Tongatapu mural, I am still getting messages from people who view it.

THE FUTURE OF GLASS - A NEW GENERATION

I think the future for the art of glass is bright, even as it gets taught less as a special medium. A student once told me that in my day, every discovery was precious. Now, the techniques and raw materials available are a smorgasbord of possibilities. You must pick and choose the best technique for the project. Imagination is the only limit. Every day generates a new idea for expression. There is no way I can do all that in a lifetime!

In my studio, I have had an informal apprentice program where mostly students, but also later-in-life people with a developing interest in glass, have come to work and discover. I try to teach what I know and allow them to grow to express technically more complicated ideas.

It's a great day for glass. It's a great day for art. Everybody is doing so many things all at once. From poetry to identity to politics to science and environmental activism, no aspect of living is forgotten in the quest for expression, and glass is a very real part of that. Our Glass Movement, as we once called ourselves, was successful in that it provided a technical basis for artists to concentrate on their statements rather than the technical aspects of glass and made those techniques public information. A medium that had been so secretive for so long suddenly opened to become a mainstream mode through peer-to-peer discovery and communication. I, at least, was so taken with the ways of producing glass and how it could be adapted for art. I took my cue from the mid-century painters who explored paint in similar ways, and ceramics, that provided a template for the rediscovery of glass. Glass is so multi-dimensional, and there are so many ways

It's a great day for glass. It's a great day for art… no aspect of living is forgotten in the quest for expression, and glass is a very real part of that.



Brian Norman with David casting glass blocks
C. 2005
Oakland, California

to insert art into previously discovered technical methods. Perhaps my original goal was just to see how it acted, and dare I say it, how beautiful it could become when consciously worked. Through art and my work with glass, I have discovered myself, who I am, where I came from, and how to preserve that memory.



DRAMA AND CREATION
ESSAY BY DAVID WAGNER

David Ruth's preparation for his geologic time series was a 50 year process that has marked him as one of our most important artists working in cast glass. His combination of technical ability, sculptural experience and architectural scale have resulted in a level of capability that few can match.

He was a major part of the studio glass renaissance along the west coast in the 70's. At this point, architectural installations were stained glass panels, dalle-de-verre slabs, and eventually thin fused glass.

Ruth moved through these disciplines with consideration, even producing his own line of hand rolled art glass and working with the top warm and hot glass craftsman of the time. A three year residency as teacher and artist in residence at the Sars Poteries Museum in northern France were followed by years of teaching fusing workshops throughout the US and the world. Soon, he began to develop his own approach to combine his interests as a painter and sculptor, on a significant scale.

An important turning point was his work in the Los Angeles studio of French artist Roger Darricarrere, one of the first studio glass artists in the US. There he learned to cast glass and soon began to see sculptural and architectural possibilities in thicker glass. During graduate work at the California College of Arts and Crafts, he was encouraged to consider glass as a sculptural medium by artists such as Marvin Lipofsky and Robert Arneson. His study of sculpture

Opposite:
Szulu
2019
Cast lead crystal glass
26" x 14" 14"

progressed simultaneously with his exploration of the chemistry and refractory engineering required to melt and shape glass in ever larger and more expressive forms.

He realized he would need to improve upon the technology of fusing and casting to create the complex interior realms he envisioned on an architectural scale, along with the thickness and transparency to carry them across. He had to master the elements of hot glass forming, large scale fusing, casting and annealing, as well as cold working techniques to develop his own approach and accomplish his vision. He began to design and build his own kilns and annealing programs, eventually producing an impressive studio and staff of artisans to accomplish his visions.

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By 2000, David was producing large fused slabs of up to 3" thickness and 1000 lbs in weight as parts of large painterly installations. His process involved his first main technical innovation – the use of trails. These are actually thick strips and slabs of molten clear glass containing individual brushstrokes of color. Hundreds of trails were arranged in the fusing bed, along with any number of cast, blown, powdered, and stringer glass pieces and carefully melted down in sizes up to four by eight feet to produce thick, richly detailed panels. He had also developed a method of cold working with large grinding and polishing machines to produce absolutely flat and highly polished surfaces, remarkably clear and revealing the fluid and contemplative structures within.

The pieces invited a comparison to stone, with their heavy, solid, and rock like feel. This would have important implications for his ultimate foray into sculptural work.

Ice Head
2016
Cast glass
7" x 12" x 17"



In 2006, David traveled to Antarctica on a National Science Foundation Artists grant. There, he produced texture molds from glacier ice and stone. For a period afterward, he engaged in the astonishing process of making castings in glass of actual icebergs, showing to exceptional degree these mysterious forms shaped by wind and water, complete with the absolutely unique range of translucent color found only in these magical natural creations as they age. Not only did he reproduce in an art form a remarkable occurrence that few will ever see, but he was also preserving a phenomenon that may become extinct as the earth warms. The Antarctica experience served as the crystallization of the potential for expression of geologic form and time in glass.

This realization merged his long fascination with the dynamic geology of coastal California, which he had studied and from which he had been gathering textures for years. Rock, like ice, is constantly in motion and he endeavored to capture this remarkable measure of deep time in glass.

This weaving of science and art resulted in his spectacular 2018 work, 'Colorado Cascade' a 400 sq ft architectural installation in a Vail ski villa. Bringing together a range of earth affects, including granite textures found near Palmer Station in Antarctica and iceberg sections along Anvers Island, as well as stone formations from the Oakland Hills behind his studio, he created a representation of plate tectonics on an actual earth scale. The varying thicknesses and color shades throughout the piece demonstrate the unique ability of glass to symbolize light in all its facets and myth. The result is a stunning merging of the translucence of icebergs and the exceptional experience of rays of light generated through a three dimensional image of the actual earth.

The suitability of glass for this approach goes beyond its appearance and ability to utilize light. It is made from powdered stone and other

The varying thicknesses and color shades throughout the piece demonstrate the unique ability of glass to symbolize light in all its facets and myth.

David Wagner lives in New Mexico and facilitates large-scale art glass installations and public sculpture.

ingredients literally dug from the earth and melted down. Like stone, David's glass sculptures are essentially frozen molten stone. The receding ice at Palmer Station reveals the frozen granite underneath, both with their own significant form and qualities. David's latest series, Geologic Editions, continues on from the achievements of the Vail installation. These intimate explorations of ancient and evocative forms echo the feel of geologic time and motion as they slowly change with the light throughout the day. This contemplative experience underlies the drama of their creation in the earth and in David Ruth's studio.

DAVID WAGNER

Artist & Glass Designer

ABOUT DAVID RUTH

David Ruth is an Oakland, California based glass sculptor that has been making large-scale cast glass sculptures and cast glass architectural features for over 30 years. Often featuring bright colors and contrasting polished surfaces with rough textures, the work has been featured in architecture, museums, and in galleries around the world.

In 2006 Ruth received an award from the National Science Foundation Artists and Writers Program for travel to Palmer Station, Antarctica. The exploration and work from this residency would become the foundation to his most recent work: Geologic Editions and Sculpture. This body of work focuses on geology and climate expressed through cast glass usually supported by metal.

When geology and ice are translated into glass and put in the light, the patterns refract the daily sun and become time markers for our planetary existence. The light transmitting through the glass becomes an indicator of time, in the day, year, the course of human activity, and the formation of the rock… extending back deep in history. Watching the work change it becomes an interactive experience where time itself stretches and contracts.

