

light work

Nikolas Weinstein designed a huge glass installation for Frank Gehry's next big building. Now if he can just keep it together.

by Ethan Watters

PANEL 31, FRESHLY ROLLED OUT OF THE ENORMOUS KILN, HAS A CRACK. IT'S JUST A little sliver of light, running six inches up a glass tube joint, and you probably wouldn't notice it. What you would see is a mass of fused glass tubes, six feet by three feet and nearly a foot thick. Lying on the kiln bed, it looks like a landscape of rolling, terraced, icy foothills. Nikolas Weinstein can see the flaw—in fact, the crack in this beautiful piece is about the only thing he can see.

Weinstein sighs and begins pacing around the kiln bed with a high-intensity halogen light looking for more defects. A half-dozen glassblowers diplomatically move off to another corner of the cavernous Mission District studio to cut more tubes. They have been through these moments before: This project has been defined by seemingly insurmountable hurdles. Weinstein could hardly have expected less when he signed on to create what may be the world's largest glass lighting installation for Frank Gehry, arguably the most famous architect of our time, for a high-profile building in the heart of the reunited Berlin. The custom design demanded that Weinstein make the piece using materials he didn't know he could get, with a technology that hadn't been developed, through a process he could only vaguely imagine.

Big breaks don't come much bigger. The DG Bank building is Gehry's most talked-about work since his Guggenheim Museum Bilbao opened to tremendous acclaim two years ago. The new building is guaranteed

not just international attention but inevitable comparison: 130,000 workers, by one estimate, are currently rebuilding Berlin, and the world's most prominent architects, from Norman Foster to Renzo Piano to Daniel Libeskind, are putting their stamp on it.

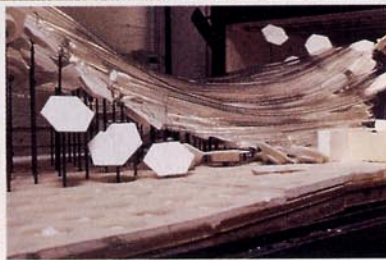
Visitors will quickly note three things once they pass through the bank's unassuming sandstone facade. The first will be two enormous glass atriums, one beneath the other. The second will be a conference hall, almost a separate structure, crouched like a metal-clad beast in the larger atrium. The third will be Weinstein's installation. Hanging above the main public space, in the lower atrium, and made of more than two and a half tons of glass, it will curve and swoop like Gehry's biomorphic room, its 36 fused-glass panels ascending like three flocks of rising birds.

To say that today's crack is just another hurdle is not exactly accurate. It's already late October, and the glasswork is supposed to be hanging in the bank building by New Year's Eve. Weinstein's crew should

process photographs by Christine Boepple | portrait by R J Muna



Architect Frank Gehry told Nikolas Weinstein what few artists ever hear: "Do what you want."



be halfway through creating the three dozen panels, and as yet they don't have a single finished piece. The last four panels they've fired have all cracked. Unless Weinstein can correct whatever is causing the problem, this little defect could represent the difference between success and failure on a million-dollar project.

After he's cooled down, Weinstein gathers three of his key people to talk about what might have caused the latest imperfection. Perhaps it was the firing time or the glass cooling unevenly. As if to add to the discussion, there is a sharp snapping sound from the kiln. Everyone turns to look. No one says a word. Panel 31 now has two cracks.

Tall and barrel-chested, with dark hair and a receding hairline, Nikolas Weinstein looks older than his 31 years. With his natural confidence, it doesn't seem surprising to learn that he has been running his own glassworks studio since he was 21. Weinstein happened onto glasswork through a summer job with a stained-glass outfit in New York. Back in Rhode Island for his last year at Brown, he took a class in handblown glass, which is where he found his passion. After some success selling his work in Manhattan, he moved to San Francisco in 1991. Eventually he found a warehouse for his Nikolas Weinstein Studios (beating out UCSF hospital officials, who wanted it for a morgue). Here he and a handful of employees create blown- or molded-glass vases, platters, lamps,

chandeliers, and limited-edition art pieces inspired by organic forms: the ribbing on a leaf, ripples on water, a seashell, a lick of flame. His glass sells in fine-furniture shops and art galleries all over the country.

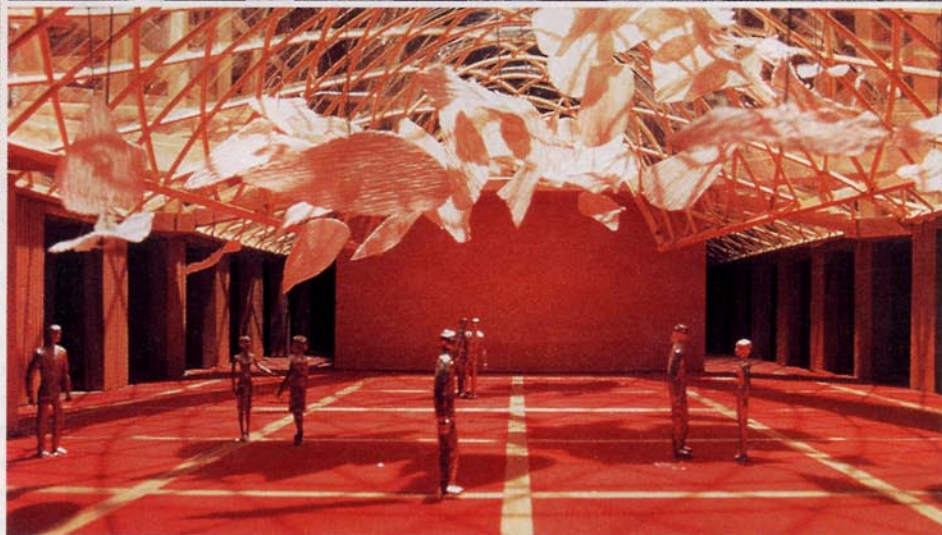
Weinstein was only 28 when Frank Gehry saw one of his fine-art sculptures in a private home in L.A. "He happened to see one of the largest pieces I ever did," says Weinstein. "It was 31 inches long and barely fit into the kiln I was working with at the time. Of course, compared to the scale of the project Gehry had in mind, it was tiny."

Gehry flew Weinstein down to his offices in Santa Monica in January 1997 and offered him an immense challenge: designing a lighting installation to fill a 5,000-square-foot atrium. The Germans have placed severe restrictions on the facades of Berlin's new buildings, and that leaves the interiors for an architect's signature. Weinstein's piece had to resonate with what the *New Yorker* later described as Gehry's "wonderfully spiteful stack of collapsing shapes and clashing materials."

Weinstein spent months working on three different designs, then flew to L.A. again. At the meeting, Gehry broke in after a couple of sentences. "Don't tell me the process you went through," he told Weinstein, "just show me the one you like best."

Reluctantly, Weinstein skipped ahead to his final proposal. "Yeah, I like that one, too," Gehry said, and then he turned to the project architect. "So what's the next step?" The meeting was over in less than 20 minutes.

"I had imagined that we were going to have this



OPPOSITE PAGE: A computerized bed of rods on the kiln floor contours the fused-glass panels (LOWER RIGHT); the custom-built kiln is as big as a small room (LOWER LEFT); glass breaks in tests to see how much weight the panels can bear (ABOVE).

CENTER: Weinstein's light fixture begins with ten-foot-long test-tube-glass cylinders.

THIS PAGE, FROM TOP: The team piles on sandbags; the two-and-a-half-ton piece will look like three flocks of rising birds; a tired smile as the panels begin shipping to Berlin. As the installation comes together, you can watch daily updates on Weinstein's website, nikolas.net.

big discussion about design, and he was going to say things like, 'I want something big and imposing' or 'ephemeral and light,' Weinstein says with a laugh. "But all he said was, 'Do what you want and we'll see what you come up with.' After that first meeting, I didn't have any clear idea how difficult a task I was getting myself into," he admits.

It took almost two years for Weinstein to complete his design. After the bank's board of directors approved his proposal, at the end of 1998, Weinstein began to realize just what he had promised. In not much over a year, he had to create three dozen glass panels, each measuring three to nine feet long and weighing hundreds of pounds. Sandblasted and opaque on the bottom, lit from above, they would create a kind of second ceiling, undulating above the bank's cafeteria.

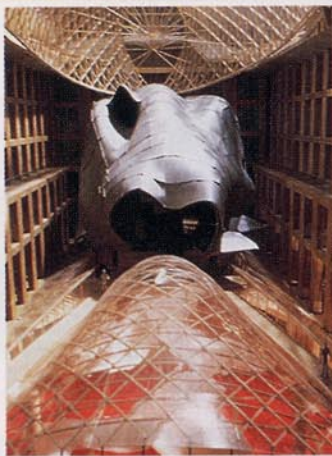
Each panel would be ten times the weight of the largest piece he and his staff had ever created. It isn't possible to blow glass into shapes this huge, so Weinstein decided to make the panels by fusing borosilicate glass cylinders called Kymex. Like Pyrex, Kymex is the sort of glass that test tubes are made of. It is thick, airless, and beautifully clear, designed to react predictably to heat. When they melt into

Weinstein's design, the tubes half collapse, but the ends remain open; it looks like what you might see under a microscope when examining a cross section of a plant stalk.

Designing a kiln to meld the tubes into leaf-shaped panels was the first big hurdle. Conceived by Weinstein and built by master kiln maker Fred Metz in Seattle, the hulking black kiln is as big as a small room and cost as much as a down payment on a San Francisco house. It is run by a computer program adapted from the code used by airline food-service companies for their massive ovens. The program regulates both the heating coils and the vents in the top of the kiln to bring the temperature up to



The lighting installation, once hung in the lower glass atrium of Frank Gehry's new DG Bank building in Berlin, will curve and swoop like the floor and ceiling and metal-clad conference room (MODEL, LOWER LEFT) in the atrium above it.



the point where glass begins to become elastic. A bed of rods then mechanically raises to bend each fused panel of tubes into a specific contour. From design to delivery by 18-wheel truck, the kiln took three months to complete.

The next major problem was making sure that the glass pieces could be hung safely. Kymex is nothing like laminated glass, which holds together when broken, or the safety glass of car windows, designed to crack into tiny cubes. Hit or drop a Kymex tube, and it shatters into razor-sharp shards. Weinstein's plan called for hanging 5,000 pounds of the stuff—from only four points on each panel—just a few feet above people's heads.

The team designed, redesigned, and modified

negotiated a reasonable air freight that bought a month's time—a cushion that was already gone when the finished panels started to crack. After each failed firing, Weinstein would telephone Herb Miska, his prime consultant, a retired glass engineer from Corning who had designed the windows for NASA's space shuttle program. Eventually, Miska suggested he call Hank Hagy, the man who literally wrote the book on how glass anneals.

The news was so bad every time Weinstein spoke with Hagy, they began to joke with each other to keep their spirits up. "Colonel Hagy," Weinstein would say, "this is Lieutenant Weinstein."

"Lieutenant Weinstein," Hagy would respond. "What's the news from the front, my boy?"

"The news is bad, sir."

The day Panel 31 cracks, Weinstein and Hagy decide to adjust the kiln to fire hotter and faster at the high end of its 24-hour heating cycle. The next day, after another panel has cooled to room temperature, it, too, has a crack.

Hagy's ultimate assessment is blunt: The kiln may be fundamentally flawed for the job they are asking it to do. The top-mounted heating unit will inevitably heat the glass unevenly, he

the plugs holding the cables that would support the panels. Weeks were spent subjecting test pieces to various types of abuse—dropping bolts and wrenches on them from above; piling on a succession of sandbags; suspending plastic garbage cans from the panels, then filling them with water—until the team was convinced the panels could hang safely.

Every part of creating a custom installation on this scale is its own adventure. It took weeks just to convince the people at Schott Scientific Glass that the studio was

serious about ordering two semi trucks filled with ten-foot-long Kymex tubes. Every hurdle cost a little more money and took more time than expected. Then there were the unpredictable setbacks, like the night the kiln's control panel fried and needed replacing. Or the time a fan crawled up its shaft and ate halfway through the kiln's insulated wall. Weinstein became adept at sweet-talking—or if that failed, pleading with—anonymous voices on the phone to get equipment custom-manufactured and delivered overnight.

Instead of planning to send the installation by ship, Weinstein's staff had

says. If the panel doesn't heat and then cool as one piece, stresses and cracks are bound to occur.

Weinstein refuses to get upset. "This problem is no worse than half a dozen other difficulties we've run into," he says when he hangs up. "We just have to figure out a new approach and give it another try."

As the final touches are being put on the conference hall's metal cladding in Berlin, the mood in the studio is turning sour. Weinstein's team has put all its other work on hold; everyone is working late into the night and giving up weekends. The almost familial camaraderie around the workshop has become strained. Threatening letters from the bank have begun rolling out of the fax machine.

Over the next few weeks, the team makes a series of adjustments. Each time, the panel cracks. By mid-November, Weinstein is dangerously low on both time and the 20 percent of the Kymex he's kept in reserve. With no time to obtain more tubes, his back is against the wall.

Hagy and Weinstein come up with yet another theory. Perhaps they should provide more time at the low-temperature end of the firing cycle, so that the glass can cool more evenly and relieve the stress as it expands. Weinstein adjusts the computer program and attaches temperature sensors to the glass: If any area is cooling too slowly, the computer will now hold the temperature steady until all parts of the panel are within 30 degrees of one another. The staff puts another mound of tubes into the kiln. A day later, they roll out the panel. It looks beautiful, and there are no cracks.

Finally, they have the breakthrough they need. Within the next month, they will have almost half the panels completed. While the installation won't be up on New Year's Eve as they had hoped, they know it will be there for the building's official opening in the spring. Today, however, there's no high-fiving as they hang the first finished panel high in the rafters. All Weinstein will say is, "One down, thirty-five to go." *ST*

