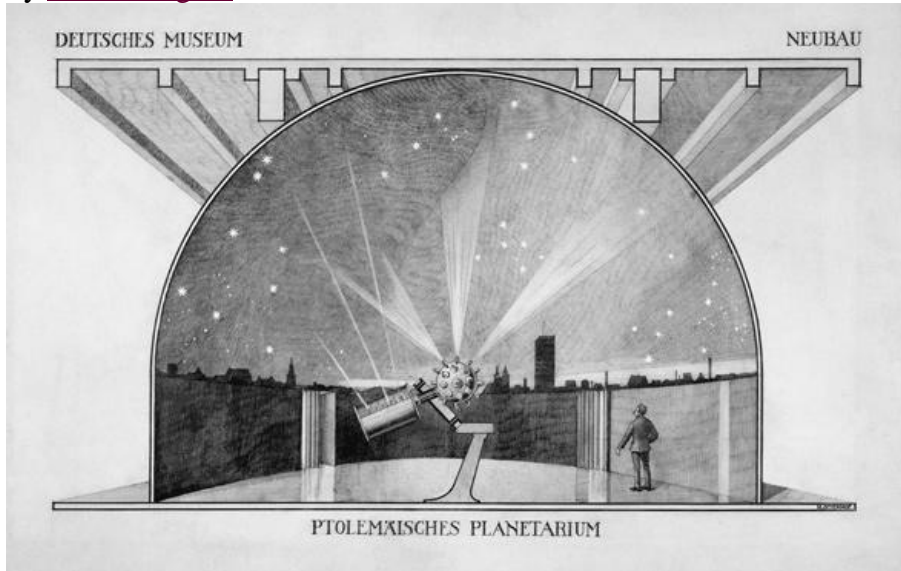


Under the Dome

The tragic, untold story of the world's first planetarium.

By [Daniel Engber](#)



Drawing of the projection planetarium in Munich, ca. 1923. Courtesy of the Deutsches Museum.

It is “[unusual, even weird and startling](#),” wrote a journalist in 1924, upon seeing the world’s first projection planetarium. “It is the best ‘movie’ I have ever seen,” said another, and according to a third, the star-dome was “nothing more nor less than a playhouse in which the majestic drama of the firmament is unfolded.”



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The new machine that had been erected on a rooftop in Jena, Germany, dazzled with a Jazz Age marriage of science and style: Optical projectors cast dots of light against the curved ceiling of a darkened theater, making stars that twinkled like the sequins on a flapper’s dress. “It became a phenomenon in a way that nobody envisioned,” says Jordan D. Marche, author of the definitive history of American planetariums, *Theaters of Time and Space*. By 1935, domes had been installed in Chicago, Philadelphia, Los Angeles, and New York City, and interest in astronomy was flourishing. Contemporary reports described crowds falling silent as the lights went down and then gasping in astonishment as the concrete vanished into constellations.

That glitz and awe, [still potent](#) after all this time, has its origins 100 years ago today. At a meeting held in Munich on Feb. 24, 1914, an engineer at the Zeiss optics firm named Walther Bauersfeld had the idea to project the sun and moon and planets on the inside of a dome. Rather than rely on moving arms and metal discs, Bauersfeld proposed to shine the shapes onto the ceiling from a central source of light. Museums around the world would celebrate this achievement: When the Philadelphia planetarium opened up in 1933, [at an invitation-only shindig with a string quartet](#), Bauersfeld got a medal in absentia.



Rudolf Straubel. Courtesy of Linda Langer Snook

A month before that party, though, another scientist at Zeiss—who was just as important to its history—had been booted from his job. Rudolf Straubel, the firm’s long-serving scientific director, chose to resign his post rather than divorce his Jewish wife. Straubel had been at that 1914 meeting, too; indeed, he’s said to be the one who expanded Bauersfeld’s idea to project not just the planets but the stars. In the years that followed Straubel’s resignation, the Zeiss planetarium mesmerized crowds with visions of the heavens. But as the invention grew in fame, a tragedy took bloody shape on the ground in Jena. Bauersfeld won a medal. Straubel sank into a private hell of Nazi persecution.

The details of this story were uncovered only several years ago, by a computer programmer in California named Peter Volz, whose grandfather worked at Zeiss during this period. With the help of Straubel’s extended family, Volz has put together a two-part article for *Planetarian*, the journal of the International Planetarium Society. There he argues that Straubel’s contributions to the planetarium were covered up by Nazi propaganda and that the fact of this cover-up was itself erased during the postwar years.

As Volz makes clear, Straubel had been involved in the planetarium project from the very start. In the early 1910s, the director of a new industrial museum in Munich asked the Zeiss firm to build a pair of astronomical exhibits. The first would be an orrery—a working model of the planets as they swing around the sun. These globe-and-stick devices had been common since the early 18th century, powered first by gears and pendulums, and later by electric motors. The second exhibit, a celestial globe, would show the heavens as they looked from the surface of the Earth. Traditionally this took the form of a giant sphere with constellations painted on its inner surface or holes poked through its walls for stars. A visitor would sit on a stable platform as the celestial globe spun around him—by means of water power, in its early incarnations—to show how stars appear to move with the changing of the seasons.

Straubel would help with both requests. As scientific director and member of the Zeiss management team, he had an entrepreneurial role, farming out ideas to junior engineers and helping them negotiate whatever problems they encountered. Though he often constructed things himself—including a large mirror in the front yard of his home, for an experiment in solar energy—Straubel rarely took credit for the company’s achievements. When signing business correspondence, he often used the founder’s name, “Carl Zeiss.”

That may be one reason why Straubel never got much recognition for his work in Munich. According to Volz’s research, Straubel had met with the director of the museum to discuss the planetariums at length in 1913, at a time when the idea of using light projection was already on the table. And Straubel was certainly present at the planning session the following February, at which he and Bauersfeld concluded that the globe should be refigured as a stationary dome, with a rotating projector at its center. This idea, whoever came up with it, made the modern planetarium possible.

Then she hiked into the hills behind the house and threw herself from a cliff.

Straubel’s legacy, or lack thereof, would be fixed in 1933. The local Nazi minister of the interior, a brutal ideologue and drunk named Fritz Wächtler, sought to overhaul the management at Zeiss, which he described as being “infested with Marxists and Liberals.” (Wächtler would later be executed by the S.S. for cowardice.) Straubel was given an ultimatum by his fellow directors at Zeiss, who now included Walther Bauersfeld: Either divorce his wife or quit his job. He chose the latter.

By 1937, 4 million people had visited planetariums in the United States. It was “truly an awesome moment,” said one visitor to the dome in Philadelphia. “I had the feeling of being completely detached from people and things.” By 1938, Straubel had been removed

from lecturing at the University of Jena on account of his “45 years of Jewish relations;” his wife, Marie, had been arrested and then released on Kristallnacht, and their son Harald—until then a Zeiss crystallographer—had been fired.

The family considered leaving Jena, leaving Germany, but Marie’s sister Therese had a bad leg and couldn’t travel. The Straubels’ niece Helene Langer—who was also Therese’s adopted daughter—put aside some alpine gear for a possible escape into the mountains, but she refused to leave Therese behind. Even so, the Straubels and the Langers were surprised to be so victimized. They felt that they were Germans. “None of these people were practicing Jews,” says Linda Langer Snook, Helene’s granddaughter and author of a self-published book about the family. (Langer Snook and her father, Gerhard Langer, a 90-year-old Holocaust survivor, were key sources for Volz’s history.) Their families identified as Protestant and patriotic; their children were only one-half or one-quarter Jewish; several had won medals during World War I, fighting for their country. Helene was cited for her wartime work in field hospitals.



Werner Straubel, Rudolf and Marie's son. Courtesy of Linda Langer Snook

At first the Jewish women in the family were spared from deportation, perhaps because their husbands weren’t Jewish. But Therese’s spouse had died in the 1920s, so she was more exposed. In September 1942, the Nazis ordered her to Theresienstadt, but she killed herself before they could load her into a cattle car.

Rudolf Straubel, who had been working from his home since his retirement, developed kidney cancer and died in 1943. Though he’d once been a celebrated scientist and businessman, his funeral was small and without eulogies. According to Langer Snook, Straubel’s ashes were buried in an unmarked grave.

With Rudolf gone, his wife, Marie—for whom he’d forsaken his career and lasting fame—learned that she, too, would be deported to the concentration camps. She took her life with pills in April 1944, with her sons beside her.

Two months later, the Gestapo came for Helene Langer while her husband was away on business. Rather than submit, she scrawled a farewell note and left it with her wedding ring and military medal. Then she hiked into the hills behind the house and threw herself from a cliff.

Two of Rudolf and Maria’s children, Harald and Werner, had worked for Zeiss; Werner sold Zeiss planetariums in the United States, among other places. Both were sent to labor camps in October 1944, where they grew skinny with fever and frostbite. The camps were liberated seven months later, but neither son recovered from the trauma of the war. In November 1945, Werner hanged himself. Harald was shipped off to Russia as a technical consultant and only sneaked his way into the West in 1958. (He died in 1991.)



Marie Straubel. Courtesy of Linda Langer Snook

The fall of the Nazis did not restore Straubel's name. The Zeiss company was split during the Allied occupation, with one half based in West Germany and the other in East Germany. The directors who had ousted Straubel—a group that still included Bauersfeld—ended up in charge at Zeiss West. Soon the two branches were engaged in a battle for control of Zeiss trademarks and other assets. Peter Volz believes that the Western firm could not acknowledge Straubel's contributions because doing so would mean admitting that its directors had acquiesced to Nazi pressure. That in turn would legitimate its rivals at Zeiss East.

Bauersfeld eventually made mention of his former colleague in a technical paper from 1957. There, for the first time, he described Straubel's presence at the meeting in February 1914. "This was the moment in which the Zeiss-Planetarium was born," he wrote, just two years before his death. It was a passing reference, though, and by this time there weren't many other people still alive who could help flesh out the record. "Rudolf's name has been almost written out of the Zeiss history," says Langer Snook, who visited the company's archives several years ago. "You find his name half a dozen times, and you find Bauersfeld's name 200 times."

These are squabbles over footnotes, though, and hard to see against the backdrop of enormous suffering that came before. It's a little sad and strange to think how Straubel and Bauersfeld's great invention functioned as a backdrop of its own. The planetarium is, if nothing else, an instrument of obscurity and diminution: It blots out the sky with false infinity and shrinks us to a dot. There's comfort in this sense of scale, of course, the thought that all our worries can be squeezed into a grain of sand and cast into the ocean. But the stars can also blind us. "**The cosmic view comes with a hidden cost,**" wrote Neil deGrasse Tyson, director of New York City's Hayden Planetarium, in 2007. "When I travel thousands of miles to spend a few moments in the fast-moving shadow of the Moon during a total solar eclipse, sometimes I lose sight of Earth."

Can the darkness of the planetarium make misery invisible? Does feeling small erode our sense of empathy? Tyson offers solace; take it as you will: The cosmic view repays its hidden cost, he claims, by teaching us that living things are all connected and that we're all part of a **cosmic chain of being**. But the arrangement of the heavens on the inside of a dome might just as well mislead us. We pretend to see the universe in all its chaos and complexity, and lose ourselves in a vast expanse that isn't really there. The planetarium can make us drunk on insignificance, so drunk that we forget what's outside its walls.