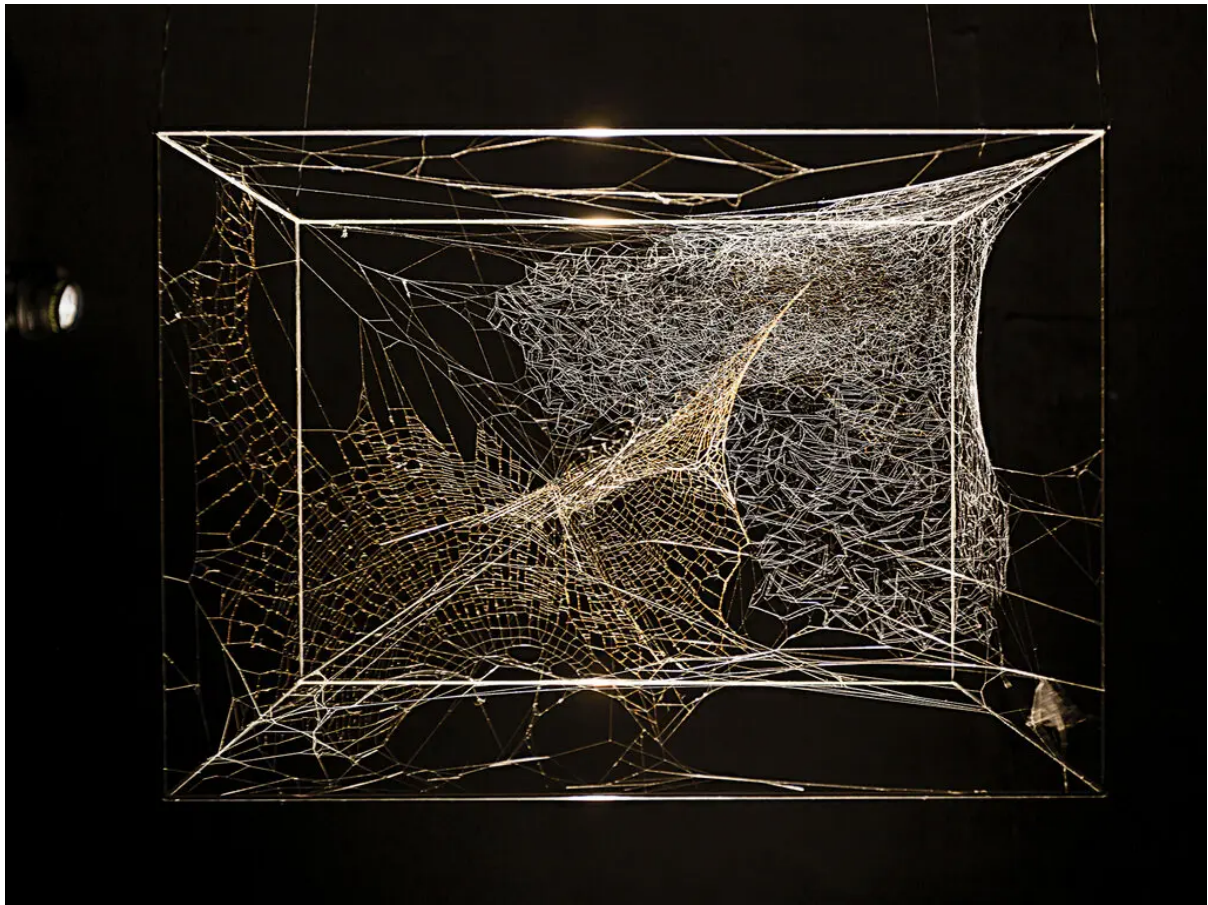


The Art World's Amazing Spider Man

 [nytimes.com/2022/02/07/t-magazine/tomas-saraceno-spiders-shed.html](https://www.nytimes.com/2022/02/07/t-magazine/tomas-saraceno-spiders-shed.html)

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TOMÁS SARACENO'S STUDIO, in a gritty eastern district of Berlin, stands on toxic ground. After more than a century of industrial use, the land was saturated with contaminants. When Saraceno took over the derelict brick building in 2012, the sale came with restrictions. "They said, 'Please don't plant apple trees near the street,'" he recalled, because "people will eat an apple and be poisoned."

For an artist preoccupied with ecological concerns, extreme environmental degradation can be inspiring. When I visited him in November, Saraceno was drying autumn leaves and pressing poppy flowers gathered from the property. One of the previous occupants of the building had manufactured color film and, although he didn't know if the company was the source of the pollution, he wondered whether its chemicals had affected the hues of the flowers and other vegetation. "In trying to reproduce the colors of nature, they may have changed the character of the soil and invented other colors," he said.

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Saraceno is a hybrid of visionary artist and eccentric scientist. Over the years, he has produced scholarly research as well as sensuous works of art focusing on his two passions, spiders and solar-powered balloons, which have captivated him since childhood. Both, he

feels, offer direct access to the mystery of the universe and provide an escape from anthropocentric, gravity-bound thinking. The immersive centerpiece installation of “Particular Matter(s),” his solo exhibition that opens this month at the Shed in New York, is titled “Free the Air” (2022) and comprises two webs that Saraceno has constructed out of metal and suspended within a balloon 95 feet in diameter that dominates the venue’s 17,000-square-foot courtyard. One 95-foot-diameter metal-mesh net hangs 40 feet above ground; the other, with a diameter of 48 feet, is 12 feet high. Only 45 people can be admitted at a time for an eight-minute stay, during which they lie on the nets in dim light, feeling and hearing rather than seeing. “The lights go down, and you become blind like a spider, because the ones that build webs have poor vision,” Saraceno said. “And you feel the vibrations,” recordings of the sound waves produced by dust hitting — and spiders interacting with — a web. He calls it “a haptic concert.”

In Berlin, I visited Saraceno’s solo exhibition at the Neugerriemschneider gallery, which opened and closed an hour early each day at the artist’s request so that it could be illuminated by natural light without the expenditure of fossil fuels. Here the showstopper was “Particular Matter(s)” (2021), the Shed exhibition’s title work, in which a beam of light shining in a darkened room reveals the omnipresent dust particles endlessly floating through the air we breathe. Some of it is cosmic dust, and some is human-made dust. Then there are the PM 2.5 particles, which include black carbon emissions from burned fossil fuels. Measuring 2.5 microns or less in diameter, they can be absorbed into the lungs and bloodstream. (A micron is about one-thousandth of a millimeter.) The luminescent column of light sparkles with glittering specks. “People come to me and say, ‘What did you put in the air?’” Saraceno remarked. “They can’t believe it is just the dust” that already exists all around us.



Saraceno's Berlin studio, which is both an art-making space and a science laboratory. Credit...Francesca Iovene

Saraceno, who is 48, is among a group of ecologically minded, technology-savvy contemporary artists who have established collaborative studios that make work often not recognizable as art at all. Among them are the Danish collective Superflex, which has designed bespoke urban parks in Copenhagen and the United Arab Emirates, and London's Random International, best known for its installation "Rain Room," which debuted at the Barbican in London in 2012, where visitors walk through an artificially created downpour without getting wet. These artistic enterprises often less resemble a traditional art studio than certain progressive architecture firms: Instead of simply producing paintings or sculptures, they engage with the public by conducting technical studies that lead to sometimes spectacular experiences.

Propelling most of these collectives' work is an urgent question: How might the human race have to reform and adapt in order to continue occupying this planet? Like their forefathers, the Southern California Light and Space artists James Turrell, Robert Irwin and Doug Wheeler, who through optical engineering destabilized ordinary vision, these artists question the nature of perception. Responding to the times, they are equally preoccupied with environmental degradation and planetary crisis. Superflex, for example, has approached climate change with a wide variety of projects: flooding a large-scale replica of a McDonald's restaurant or fabricating bricks to replace marine reefs that have been affected by industrial projects. The Icelandic Danish artist Olafur Eliasson, who is a close friend of Saraceno's, has a 100-person Berlin studio that has produced works such as "Algae Window" (2020), a site-specific piece in Zurich composed of transparent glass

spheres in the form of a carbon-removing diatom, or his most celebrated work, “The Weather Project,” which in 2003 filled the Turbine Hall at Tate Modern with an impressively lifelike representation of the sun and the sky using mono-frequency lights and mist.

Saraceno is a reminder that the gulf between science and art is a relatively recent distinction, and that, once, an artist wasn’t just limited to a paintbrush or a chisel.

Unlike some of his wide-ranging peers, Saraceno, along with about 20 assistants, works within a restricted palette. He wants to connect the tiny to the vast, the local to the empyrean. Another work at Neugerriemschneider, called “Printed Matter(s)” (2018), is a series of photos on handmade paper of cosmic dust, made by reproducing images from a 1982 NASA catalog and using as ink black gunk pollutants extracted from the air in Mumbai, India. The galaxies are spread across the universe in clusters that punctuate large voids, much like the nodes of a spider web. Astrophysicists have found that computer simulations of the cosmos look a lot like three-dimensional spider webs, he said. His vision shifts back and forth. “I like very much when you get a different shape,” he explained, “when what you see is made of pollution, and what you see is the universe.”

TODAY, SARACENO, WHO is divorced, lives a 10-minute bike ride across the Spree from his studio in Rummelsburg, but he was born in San Miguel de Tucumán, in northern Argentina, to a botanist mother and an agronomist father. In 1975, in the lead-up to a right-wing military takeover, his father was imprisoned for nine months, and the family (including Saraceno and two siblings) then relocated to a village in northeastern Italy. “We occupied the second and third floors of a 500-year-old house with an attic full of spiders,” he said. “You could see the light coming through the windows and dust in the air. The web is like an extension of the spider. It was something that captivated me.”



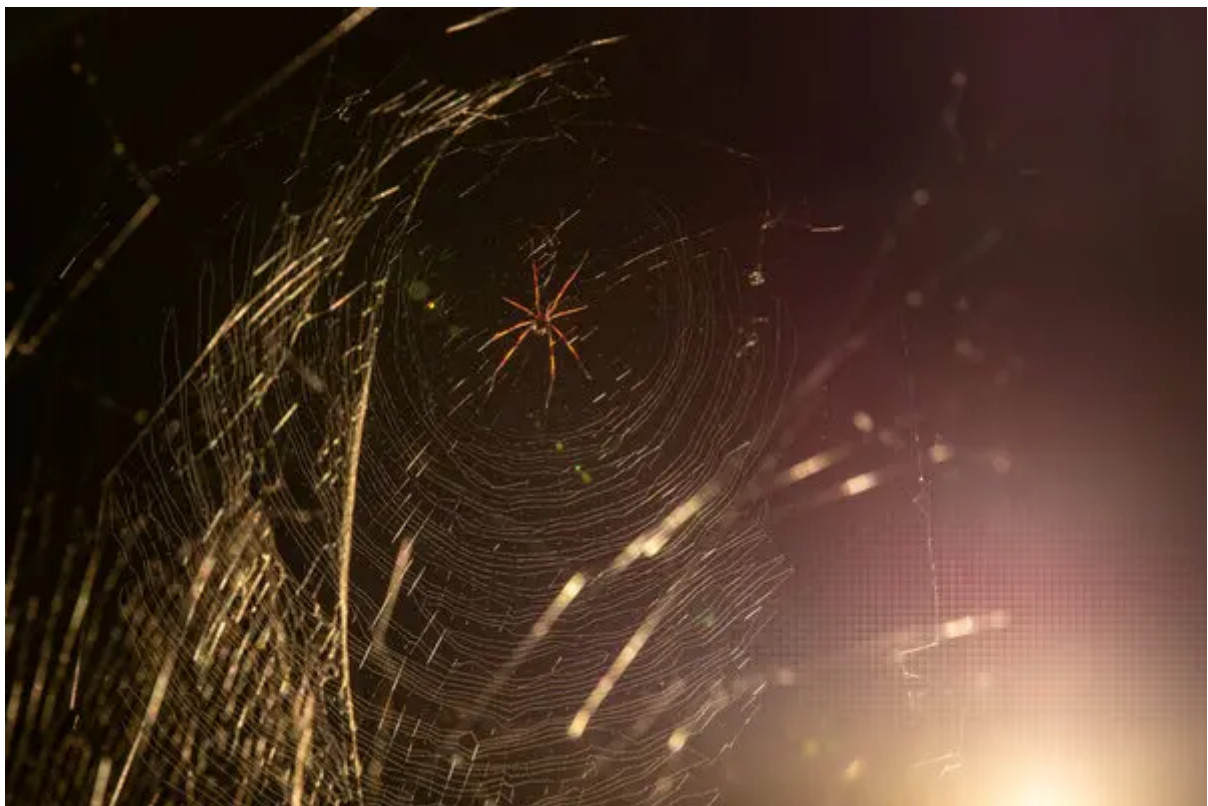
A photo of the installation of Saraceno's "Free the Air" (2022) at the Shed in New York. Credit... Courtesy of the artist

The family returned to Argentina in 1986, when Saraceno was 12. In Buenos Aires, he studied architecture, mainly because a friend was also pursuing it: "I became really precise, but I didn't have the patience. There was not so much inquiry." In 2001, he moved to Frankfurt to attend the Städelschule, where Peter Cook, the theoretical genius of the futuristic Archigram group (known for its intricate drawings of unrealized and far-out projects), was ending his tenure. Daniel Birnbaum, a respected curator who was the rector

at the Städelsschule during Saraceno's time there, said, "His ambition was grand already, even if he had no means to realize it. He had two things — balloons and spiders. They remain the same."

Saraceno's breakthrough came at the 2009 Venice Biennale, which Birnbaum directed. His work, called "Galaxies Forming Along Filaments, Like Droplets Along the Strands of a Spider's Web," consisted of floor-to-ceiling webs made of black rope. There, as in his subsequent works, his architectural training came to the fore. "He's not afraid of scale," Eliasson told me. "Ten meters, 20 meters, 30 meters — it doesn't matter. He could scale things up easily. The other thing was how to work together. As architects, there is a division of labor. As soon as you're not good at something, you find someone who is and have him do it, asking when you don't know how to solve it. An artist goes down into the hyperlocal. A great architect is able to take a helicopter view."

Along with being Saraceno's friend and philosophical peer, Eliasson was also, about 20 years ago, Saraceno's boss. "He would stay for a couple of weeks and then go away for a couple of months and come back," Eliasson recalled. "Sometimes, he would just have a plastic bag and walk in and be long-bearded, and we would encourage him to take a shower." But Saraceno bristled with ideas. "He asked more questions than he came up with solutions," Eliasson said. "Often, he wasn't patient enough to sort out the answers. His questions were less about how, always about why. He was like a bundle of trajectories — if you take a lot of trajectories and throw them into a bag."



*A Nephila senegalensis spider in Saraceno's studio. Credit...Photo: Studio Tomás Saraceno.
Courtesy of the artist with thanks to Arachnophilia*

For his part, Saraceno distinguishes himself from Eliasson, whom he likes and admires, by virtue of his scientific ambitions. “I was more proud of being [written about] twice in Nature than in Artforum,” he said. “My family would not read Artforum.” (In 2009, he graduated from a two-month-long program at the International Space University, held at a NASA center in California. When I asked what he had learned there, he corrected me. “What did they learn from me?” he said.) Since 2012, he has collaborated with Markus Buehler, a professor of engineering at M.I.T. who studies protein materials for a variety of applications. Saraceno wanted to find a way to make large-scale models of three-dimensional webs. Joining forces with the photogrammetry lab at the Technische Universität Darmstadt, he illuminated the web with a laser and used two high-resolution cameras to capture images of cross-sections. With that data, he could build a model. Buehler and his lab then developed mathematical tools to automate the process and further study the webs. “Tomás is a great scientist as well as a great artist,” Buehler said. “I’ve met a lot of artists at M.I.T. I’ve never met someone like him, who is an artist but genuinely interested in the exploration of science and the advancement of knowledge.”

Saraceno is a reminder that the gulf between science and art is a relatively recent distinction, and that, once, an artist wasn’t just limited to a paintbrush or a chisel. Leonardo da Vinci designed flying machines; Michelangelo was an architect; Bernini staged a spectacle in which water flooded a theater. Saraceno is trying to revive the idea that the realm of artists is not the museum or the gallery but the world itself.

THE FIRST HOT-AIR balloon dates to late 18th-century France, but as early as the 15th century, Leonardo da Vinci was drawing designs for air travel. One of Saraceno’s clearest forebears is a fellow Argentine named Gyula Kosice, who was known for his visionary models in the mid-20th century of habitats that would float half a mile above sea level. Another inspiration is Buckminster Fuller, who imagined something called “Cloud Nine”: airborne geodesic spheres — round balloonlike forms made of linear struts — that would contain small cities, a kind of green alternative for living long before such a concept started to feel like a necessity.

Along with being visually arresting, Saraceno’s balloons are meant to function and, over the years, his crafts have set records for time aloft and distance traveled. All of them rely on solar heat, sometimes supplemented by infrared radiation. “We don’t burn anything,” he said. “We let the sun do it. As long as the sun is out, you go up. But when it comes down, the balloon drops.” In 2006, in San Luis, Argentina, he went up in a balloon made of polyethylene, 12 or 15 microns thick. But when he tried it again, this time in Córdoba, Argentina, with his mother in attendance, he fell, breaking his back. “It was five or six years’ recovering,” he said. “I was a little bit crazy.”



Saraceno in his studio. Credit...Francesca Iovene

The balloons he now launches are made of black Skytex 38, a coated fabric used for paragliders. Since 2007, he has been engaged in a traveling project, “Museo Aero Solar,” in which people bring discarded plastic bags to be incorporated into an ever-growing balloon. (It will be part of the exhibition at the Shed.) Together with members of Aerocene, a community that has evolved from that project, he introduced inflatable ballooning kits that are contained in backpacks and provide open-source information aspiring aeronauts can download. “It’s a transformation from 20th-century thinking that there is only one way of flying a balloon,” he said. “It’s like there is only one car — and then there is a hybrid car.” In the same way, spider webs also promise an escape from bodily constraints: Just as a balloon acts as wings for a human, a web is a sort of external organ that the spider spins for itself. (Some spiders can use a thread of silk to catapult themselves across distances, a feat known as ballooning.)

But if Saraceno’s obsessions are urgent, there is hopefulness in them, as well. Central to his worldview and his art is the idea that humans can communicate directly with nonhuman life-forms. Spiders, Saraceno pointed out, have been on Earth for 380 million years, versus humans, who have only been here for 200,000. His work suggests that we can save ourselves, if only we learn how to listen, and see, more attentively.

I thought of this on my visit to Studio Saraceno. At one point, the studio had been home to dozens of spiders, a source of artistic inspiration and scientific inquiry for the artist and his colleagues. Now, there was only one spider collaborator in residence, a small, dark *Nephila*, a genus usually found in warm climates. Saraceno had placed her in a carbon-frame box where another species had already left a web, and then turned the box upside

down. The structure being created was mesmerizingly complex. The relationship of the web to the spider was itself boundary-defying. The web functions as a sensory organ of the spider, and there is no clear demarcation between the two. For an artist dedicated to dissolving boundaries between disciplines, the spider is an eminently suitable daemon.

From a collection of tuning forks, Saraceno selected one that would oscillate with the hertz he wanted, saying, “Two hundred and thirteen is usually the frequency of a cricket.” He went to the edge of the web and vibrated the tines of the fork. The spider, which had been resting immobile at the other side, raced over to investigate whether a meal had arrived.

“Let’s not think that we are all equal and the same in the mind,” Saraceno said. “It depends on your background and your interest. I am very interested in when a work of art can entertain my mother, a scientist; and my father, an agronomist; and a spider diviner — and even the spider.” He said that during his 2018 exhibition at the Palais de Tokyo in Paris, the free-roaming spiders in the building (whose whereabouts he had specialists determine by using tuning forks) were coupling contentedly. The experience made him wonder whether we, the humans, might coexist peaceably with the spiders. Watching him, I was ready to believe it.