

Energy Is Never Lost

A Portrait of Swiss Artist Margrit Fischer-Hotz

The individual is jointly responsible for the whole, through everything he does . . . because he takes part in the events, acting in his field.

—KARL JASPERS, GERMAN-SWISS PSYCHIATRIST (1883–1969)

The most beautiful thing we can experience is the mysterious. It is the source of all true art and science.

—ALBERT EINSTEIN, IN *LIVING PHILOSOPHIES*, 1931

Born in 1938, Margrit Fischer-Hotz is a Swiss artist based in Zug. She began painting using mixed media in the second part of her life and developed an intense and inspired artistic career after the death of her husband, Walter E. Fischer [1], a renowned Swiss nuclear and particle physics scientist instrumental in founding the Paul Scherrer Institute (PSI) [2] in the late 1980s. Today the PSI is the largest research institute for natural and engineering sciences in Switzerland, conducting cutting-edge research in four main fields: future technologies, energy and climate, health innovation, and fundamentals of nature. Fischer-Hotz's artistic work is largely inspired by research in physics, biology, and space sciences, and by the great scientists of the past century and of our time. She testifies below about her journey and her approach.



Fig. 1. Los Alamos National Laboratory, privately operated under contract from the United States Department of Energy by Los Alamos National Security, LLC, between 1 October 2007 and 31 October 2018, (Public domain.)



Fig. 2. Joint Institute of Nuclear Research, main office, Dubna, 10 May 2015. (Public domain)

Walter E. Fischer, a theoretical physicist, was my husband. We spent the years between 1964 and 1972 at the Conseil Européen pour la Recherche Nucléaire (CERN) in Geneva. During that time, I shared a long correspondence with Carlos Rubbia, a future Nobel Prize winner [3]. While in San Francisco during the 1967 “Summer of Love,” we shared science-world gossip, and our background knowledge, on a basis of friendship and trust. I felt privileged to witness the historic site of Los Alamos National Laboratory, in New Mexico, where the U.S.A. developed the first atomic bomb under the Manhattan Project (Fig. 1). During the late-Cold War Gorbachev era, we also visited the Dubna Joint Institute for Nuclear Research (JINR), founded in 1956 [4] as a socialist international counterpart to CERN (Fig. 2). I was fascinated by this international exchange and by the founding principles of the JINR, the aim of which was to maintain open exchanges in times of global race of arms and nuclear energy problematization in general. The JINR is also known for the invention of the Synchrotron [5], a predecessor to the Large Hadron Collider (LHC). Walter was one of the driving forces in developing the PSI in Villigen, Switzerland, where it is part of ETH Zurich and ETH Lausanne today. He was a world-renowned physicist and contributed much to the networking and systematization of nuclear research. He was known in Berkeley, at the California Institute of Technology (Caltech), in Novosibirsk, in Vladivostok—everywhere. He was also a pioneer in establishing the Swiss Spallation



Fig. 3. Margrit Fischer-Hotz, *Every thing is Quantum*, 2019, 1.80 m x 1.50 m. (© Margrit Fischer-Hotz. Photo Gary Soskin.)

Neutron Source (SINQ) at PSI Villigen [6]. He passed away 17 March 2008. It's not surprising that all this has influenced me, especially when it comes to my art.

ART AND SCIENCE, A VISION

In November 1991 I had a vision. It was clear to me that I wanted to work with both art and science. I am not a scientist, but I intend my work to arouse the curiosity of young people and inspire scientists. I mentioned previously the experience of accompanying my husband's travels around the world for his research. My first works addressed how medicine and biology contain energy fields. In all energetic invisible work lies the notion of a secret that a researcher will one day clearly recognize and decipher for the benefit of humankind. Later I integrated cell structures, bacteria, mitochondria, molecules, and so on into my works. From new research in medical microbiology, I wove parts into my paintings with mixed media on paper and canvas. In short, the digital images emerging from the micro and nano areas fascinated me, and I always wanted to translate them in my own visual language (Fig. 3).

I was impressed also by the discovery of new particles in quantum physics, the Large Hadron Collider particle accelerator at CERN, and the planets in space. I always felt the need to combine all these disciplines to interweave them into a holistic abstraction. The wise words of the Greek philosopher Democritus (460 BCE) became my guiding principle: "Nothing exists but atoms and the void"—he did not know at that time that even atoms are divisible. My later works about physics and the universe were guided by his statement in their development.

We live in a time in which science has more weight than ever. Without physics, we would be without many beneficial

developments—think of the World Wide Web, cutting-edge medicine, space travel and observation, and so much more (Fig. 4). What emerges from scientific research is what we humans make of it. What worries me today is that quantum physics can be misused, as happened with nuclear physics, prompting Einstein's stand against nuclear weapons (the Russell-Einstein Manifesto, 1955). Thus, in 1957, the first Pugwash Convergence took place in Pugwash, Nova Scotia, Canada [7].

ART AS ELIXIR OF LIFE

I sometimes work in the middle of the night. Everything is quiet then, and new ideas come to me. I still draw paintings in gouache mixed with collages and pencil drawings of about 1.5 x 7 meters. My motivation to paint and sculpt has always come from an inner desire to create and express myself. After Walter's death, I became independent and realized that everything we do is rooted in expressing our personal experience.

Although in 1957 I was set to enroll in art studies at the Ecole Nationale des Beaux-Arts, Paris, it didn't happen. In the period after World War II, I had to prioritize earning money to survive. I never attended an art academy. But in my younger years I continued my studies in applied arts courses. I was always happy to have my work supported by many people.

Under the instruction of Gianmarco Torriani and Carlo Pizzichini, at the Art Foundry Perseo in Mendrisio, Switzerland [8], and at the State Art Academy, Italy, I made bronze sculptures. I have had a number of exhibitions in Switzerland; some of these were curated by Maya Minder. She was fascinated by microscopy and later started her own DIY bio lab with the International Hackteria Society [9].

Many works of literature have inspired me, including *Space Without Rockets* [10] and *Mojave Epiphany* [11] by Ewen Chardronnet. Reading them awakened new impulses in me (Fig. 5), such as when I found out that Frank J. Malina created kinetic art after serving as the first executive director of NASA's Jet Propulsion Laboratory during World War II. I dream of visiting the Observatoire Astronomique de Marseille-Provence (OAMP) [12] one day, of which Frank Malina's son Roger was once director. Will I still be able to do that in my old age? Who knows?

ALPINE LIFE AND BEYOND

I have lived a wonderful life and I am content. I was born 25 May 1938 and raised on a large estate near Zurich. We were a large extended family consisting of grandparents, great-grandparents, parents, a farmhand, aunts, and cousins. Everyone helped on the farm. Relatives and friends from Zurich often came to visit. They knew that Grandmother would give them gifts of flour, eggs, fresh garden vegetables, homemade



Fig. 4. Margrit Fischer-Hotz, *Magic Sky*, 2020, 6 parts, 1.50 m x 1.80 m, together 6.40 m x 3 m. (© Margrit Fischer-Hotz. Photo: Gary Soskin.)

smoked sausages, apples, plums, and potatoes. In return, we received discount coupons for chocolates. That was the postwar period. I remember that they gathered leftover corncobs from our fields and baked bread in the city from the flour made from the kernels. It was an entirely different time. Women were not meant to be artists or scientists.

At the age of 12 I had my own large studio and could make ceramics, paint, draw, and sketch. I felt even then that creativity was my elixir of life. At 17 I made the decision to visit the U.S.A. for the first time. After my return to Switzerland, I worked as a federally certified secretary in various Swiss banks in Zurich and Geneva. I got married and started a family with Walter in 1964. Today I have two children and five grandchildren. All of that said, art has always accompanied me on my journey, including exhibitions in Zurich, Geneva, Lucerne, Davos, Lugano, and Zug. I am especially happy that I can still create a large amount of work given my old age.

It is fascinating to see how, at this time of my life, from the late postwar period to today in 2023, the world has turned 180°. Science and technology have emerged at the speed of light, transforming our planet. I experienced the Second World War as a child on a farm. I witnessed the economic growth of the postwar generation and was able to travel to the U.S.A. to teach. With my husband, I saw behind the Iron Curtain and could access cities, knowledge, and places of collaboration in the name of science. Its role as a neutral mediator in a time of severe restrictions and regulations convinced me that science lives well beyond borders. Science always fascinated me, because of the universality of its language. Everyone can speak the same language, regardless of the political regime to which they belong. My urgency to express all of this through my art emerges from the appreciation of the opportunities given to me. I was granted the chance to experience this significant political area. I try to communicate these genuine scientific inventions in my creative work.



Fig. 5. Margrit Fischer-Hotz, *Untitled*, 2020, 0.77 m x 0.52 m. (© Margrit Fischer-Hotz. Photo: Gary Soskin.)

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References and Notes

- 1 For the work of Walter E. Fischer, see Walter E. Fischer and Rudolf Morf, *X-Rays, Neutrons and Muons: Photons and Particles for Material Characterization* (Wiley-VCH, 2012).
- 2 The institute, named after the Swiss physicist Paul Scherrer, was created in 1988 when Eidgenössisches Institut für Reaktorforschung (EIR, Swiss Federal Institute for Reactor Research, founded in 1960) merged with Schweizerisches Institut für Nuklearphysik (SIN, Swiss Institute for Nuclear Research, founded in 1968). The two institutes, on opposite sides of the River Aare, served as national centers for research: one focusing on nuclear energy and the other on nuclear and particle physics. Over the years, research there has expanded into other areas. See www.psi.ch/en (accessed 18 March 2023).
- 3 Carlo Rubbia (born 31 March 1934) is an Italian particle physicist who shared the 1984 Nobel Prize in Physics with Simon van der Meer for work leading to the discovery of the W and Z particles at CERN.
- 4 The Joint Institute for Nuclear Research (JINR) was established on the basis of an agreement signed 26 March 1956 in Moscow by representatives of the governments of its 11 founding countries, with a view to combining their scientific and material potential. The USSR contributed 50% and the People's Republic of China 20%. On 1 February 1957, JINR was registered by the United Nations. The institute is in Dubna, 120 km north of Moscow. For more information, see www.jinr.ru/main-en/ (accessed 18 March 2023).
- 5 The Synchrotron was a synchrotron-based particle accelerator for protons at the JINR in Dubna that was operational from 1957 to 2003.
- 6 The SINQ at PSI has been in operation since 1996 using an optical guide system to transport low-energy neutrons from the source to the neutron beam lines. For more information, see www.psi.ch/en/sinq (accessed 18 March 2023).
- 7 The Russell-Einstein Manifesto, released 9 July 1955, called for a conference for scientists to assess the dangers of weapons of mass destruction, then only considered to be nuclear weapons. Cyrus Eaton, an industrialist and philanthropist, offered on 13 July to finance and host the conference in the town of his birth, Pugwash, Nova Scotia.
- 8 Perseo SA is an art foundry with a focus on sculptures in bronze, aluminum, silver, and alpaca silver. It was established in 1952 in Mendrisio, Switzerland. For more information, see www.perseoartfoundry.com/en/ (accessed 18 March 2023).
- 9 Hackteria is a web platform and collection of open-source biological art projects initiated in February 2009 by Andy Gracie, Marc Dusseiller, and Yashas Shetty, after collaborating at Interactivos?09 Garage Science at Medialab Prado in Madrid. The aim of the project is to develop a rich wiki-based web resource for people interested in or developing projects that involve bioart, open-source software/hardware, DIY biology, art/science collaborations, and electronic experimentation. In 2020, Hackteria started an Open Science Lab at Bitwäherei hackerspace in Zurich. For more information, see www.hackteria.org (accessed 18 March 2023).
- 10 Ewen Chardonnet and Rob La Frenais, eds., *Space Without Rockets* (Paris: UV Editions, 2022).
- 11 Ewen Chardonnet, *Mojave Epiphany* (Paris: Editions Inculte, 2016).
- 12 The Marseille Observatory in France dates to the early eighteenth century. Roger Malina served as director from 2008 to 2012.