

Foreword

Stone is turned into meat. In his spectacular project *Prometheus Delivered*, Thomas Feuerstein stages a fascinating laboratory of bubbling bioreactors, mysterious fluids, pumps and endless tubes that wind around a replica of a classicist marble sculpture of Prometheus and twist and turn through the entire exhibition. It is the first major solo exhibition of the Austrian artist in Munich. The ERES Foundation, in association with HaL (Haus am Lützowplatz, Berlin) and the Schering Foundation, is pleased to present Thomas Feuerstein as one of the most important contemporary figures at the confluence of art and science.

Prometheus Delivered pursues the specific use of and reflection on scientific practices to demonstrate a new realism in art. The aesthetics of art are linked to the poetics of the machine and the laboratory, which allows a piece of art to emerge as part of a process. At the center of the project is a marble sculpture, Prometheus bound, which is slowly decomposed by chemolithoautotrophic bacteria. The biomass of the organisms is also the source of energy for liver cells, which cause an organic sculpture to grow.

For over twenty years, Thomas Feuerstein has worked with scientists. Above all, his collaboration with Innsbruck radio-oncologist Thomas Seppi from the University of Innsbruck has proven to be extremely fruitful. So the liver cell sculpture – which was marveled at in the exhibition entitled *Octoplasma* – would have been unthinkable without a special medical-technical process that was developed specifically for the project.

Thomas Feuerstein loves laboratories. He observes, researches, digs deep into scientific matter. But that's not all. He is also an outstanding illustrator, draftsman, radio playwright and author. For the ERES Foundation, with its focus on the interplay between art and science, the exhibition with this artist is a particularly successful example of what the connection between the two worlds can best convey: the sensual and emotional experience of the latest scientific findings with the resources of art. Stone-devouring bacteria, called chemolithotrophs, have only recently been discovered as „stars“ of science. Their ability to engage in chemosynthesis instead of photosynthesis, that is, to metabolize

dead matter and transform it into living matter is one of the most astounding characteristics of these creatures, which have been around since prehistoric times.

Prometheus Delivered: the visionary, the liver, delivered, liberated, but also, in medical terms, released. The title of the exhibition opens a wide range of meanings. And it is also a story set somewhere between speculative science fiction and horror. It leads to the depths of a new materialism in which human beings, their bodies and their environments are subjected to a fundamental transformation. Humans no longer feed on animals and plants, but on stones. Archaic bacteria and archaea, hidden beneath the earth's crust and slumbering from the dawn of life, turning minerals and ores into biomass, are transforming the metabolism of our culture. Oil, plant or animal resources are no longer necessary to meet energy needs. The use of chemolithotrophic organisms creates a „petrobiology“ and replaces petrochemicals.

The exhibition shows this development with images and objects, sets them to music via a literary fiction and performs them through biochemical processes: A marble sculpture - a replica of *Prometheus Bound* by Nicolas Sébastien Adam (1762) – is dissolved by the metabolism of microorganisms that in turn cause liver cells to grow. Inorganic stone turns into organic meat. Prometheus becomes a transubstantiation machine that establishes an economy between the „ancestral“ and the „posthuman“.

Out of the deconstruction of the myth of Prometheus and its place in art history, a new sculpture in the form of a hypertrophied liver has been generated. Whereas in antiquity looking at the liver was a means of prognosis, this „live(r) sculpture“ by the artist poses questions about life in a future that has long since begun.

Primeval archaea and bacteria (including acidithiobacillus ferrooxidans) feed on a bioreactor of iron and sulfur, which they release from rock. Their metabolism produces sulfuric acid, which they release into the surrounding water. The acidic water flows through the tubing into the marble sculpture and its limestone is decomposed by the acid and turns into plaster. By reacting with the limestone, the pH value of the water in the process is buffered and, after refluxing into the reactor, makes the constant growth of the microorganisms possible.

A line of filters extracts and collects the plaster particles flushed out by the water, another harvests the biomass. Both the inorganic (gypsum) and the organic (microorganisms) material are intermediates and are sent to a laboratory installation for further processing. From the gypsum dissolved in the water, a sculpture grows like a stalactite. The bacteria are subjected to a fermentation process, from which, among others, glucose and proteins are obtained as nutrients. After purification, the substances obtained from the microorganisms feed a liver cell culture in a bioreactor. Research and technical realization are carried out by Thomas Seppi of the Department of Radiotherapy and Radiooncology at the Medical University of Innsbruck and supported by Hektros S.r.L. The biotechnological concept is based on a new cell culture method, which, for the first time, makes it possible to feed transformed liver cells *in vitro* with a pre-purified extract of chemolithotrophic bacteria and have them grow in a bioreactor.

The three-dimensional matrix for tissue culture is produced by using a 3D printer. It is also traversed by a finely branched capillary network that the treated bacterial extract can continuously flow through. Scientifically speaking, the innovative nutritional concept is combined with state-of-the-art cell culture techniques to produce infinitely divisible liver cells in organ scale.

As the curator of this exhibition, it was a great pleasure collaborating with Dr. Marc Wellmann, the curator of HaL, Haus am Lützowplatz, in Berlin. Without his cooperation as well as the generous support of the Schering Foundation, and Heike Catherina Mertens, who brought us together, this

exhibition in the gallery of the Eres Foundation would not have been possible. So once again, special thanks to them.

Above all, however, I want to thank Thomas Feuerstein and his project coordinator Eva M. Kobler for the wonderful joint effort, the precise planning and the immense personal commitment involved in setting up these very sensitive objects in Berlin and Munich. Many thanks also to the installation crew, who performed a truly Herculean task setting up the 1 ½ ton Prometheus sculpture.

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Sabine Adler