Working

The author

Prof. Jürgen Claus, born in Berlin, is a solar artist and author of numerous books on contemporary art and architecture. He taught, for example, at the Academy of Media Arts in Cologne and at the Academy of Fine Arts in Munich. In 2003, Jürgen Claus opened his »RaumSolar« in Munich-Neuhausen, studio and exhibition rooms devoted to solar art, solar design and solar architecture. An exhibition entitled »Working with the Sun: 20 Years Solar Art« has been open to visitors since March 2004. Jürgen Claus is member of the board of directors of the international association »Eurosolar«. In 1995, he and his wife Nora received the European Solar Prize.

with the sun

The SolArt Global Network was founded eleven years ago and unites artists worldwide for whom sunlight represents an important compositional element. Initiator Jürgen Claus reports.

Sally Weber: Solar installation »Matrix«, Ventura, USA, 1999

It all began in October 1984: »Heavy weather« reigned on the North German coast around Cuxhaven – the fitting backdrop for an unusual get-together. Artists from the USA, Nigeria, Korea and Germany had followed invitations to a »North Sea Coast Symposium«, where the weather was to be made the central theme of their art. In my picture diary I wrote: »This afternoon, we reached our goal: An illuminated pyramid powered by solar energy. It shines out at night over the dykes. Rain, storm, damp: Clenching (solar) teeth.«

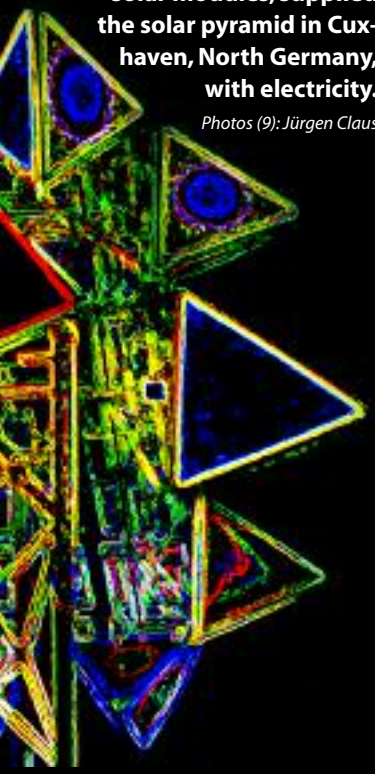
It is now 20 years ago, namely in 1983, that I conceived the solar pyramid and persuaded Joachim Benemann, who was at that time working for Siemens, to organise the mobile solar generator. In January 1984, together with my wife Nora Claus, I presented the first illuminated pyramid powered by solar energy at the »Boat« fair in Düsseldorf, Germany. In September 1984, this was followed by my exhibition »Art and Technology« at the German Federal Ministry of Research and Technology in Bonn. Here again, the solar generator, with six integrated modules each comprising 144 monocrystalline silicon cells, was the energy source for a widely radiant work of art. The next stop along the road was Cuxhaven.

Such captivating associations are conjured up by the concept of a »solar-mobile«: the ancient mythological and Celtic chariots of the sun. It was for the ancient cultures quite natural to make use of light as a creative medium, much more natural than for us today. If such ancient concepts are stripped of their mythical and religious component, then they are actually very contemporary. They point to the coming, conceivable, perhaps even inevitable solar age, in which the powers of light are decisive and integral constituents of our cultures. These thoughts, wrenched

A solar performance contributed by Jürgen and Nora Claus to the North Sea Coast Symposium in Cuxhaven, Germany (1984): The tubular lights were supplied exclusively with solar power.

Sun Chariot: The mobile solar generator from Siemens, with six integrated solar modules, supplied the solar pyramid in Cuxhaven, North Germany, with electricity.

Photos (9): Jürgen Claus



The »Solar Icosahedron« by Jürgen Claus is a geometric body comprising twenty equilateral triangle faces, mounted on a six-metre mast.

from the elements on that stormy coast, marked our departure along a new path, the elaboration of artistic-cultural drafts for a solar age and the inauguration of a broad discussion of these drafts.

Painting with sunlight

Nora and I gradually realised that solar art was not going to attain its success through solo actions. It called rather for networking of the activities already being pursued and those slowly emerging worldwide. Through my artistic research work at the Center for Advanced Visual Studies of the MIT in Cambridge/USA, and also through my participation at various »Sky Art« conferences (addressing art in near and distant space), I was able to meet artists who were interested in or even working with natural light and cosmic energies.

»The Proliferation of the Sun« was the title of a light performance by Otto Piene in 1967. Born in Laasphe/Westphalia, Germany, Piene had lived and worked in America since 1964. Many of his works contained references to the sun, vivid protuberances fashioned with real fire. His light sculptures took on the appearance of models of artificial suns.

American artist Dale Eldred also showed himself to be a solar enthusiast in his grand-scale environmental sculptures. In 1986, he installed 32 mirrors coated with yellow foil high in the mountains of the Californian Yosemite National Park. At midday, they became receivers of sunlight – and transmitters of a radiant line of light visible over many kilometres. In the same neighbourhood, another artist, Shawn Brixey, used a system of solar reflectors to excite fine graphite particles held in a vacuum in a glass container some 18 metres away. A dancer performed in the reflected beam of the sunlight: »I was the link,« she said later, »between the old energy of the sun and the newer, man-made energies.«

All these artistic events have one thing in common: they sharpen our awareness of solar energy. We have always worked with the metaphor of the sun, throughout the centuries. But now – and this is new – the works of art are extending their sensors directly into the light, exploiting its energy to depict this energy. The sun has become a partner and creator of art installations. Solar art channels the sunlight into environment-related installations, illuminates outdoor holograms, prisms, mirrors and reflectors, and draws energy from photovoltaics or the wind. Art is solar-aware and at the same time solar-powered. It was this, which we wanted to make visible through a world-embracing network.

Network for the solar idea

Ten years after the first practically implemented solar pyramid, we founded the »SolArt Global Network« in 1993. With »network« we meant not specifically the links in the worldwide information sphere, but above all real in-situ connections, solar works »networked« with each other. SolArt, or SGN as we call the network for short, is conceived as a forum for dialogue between people from different professional, cultural and language backgrounds, defined and maintained by the participating artists, designers, architects and scientists. We undertook a first world tour in 1993 to promote the establishing

of the network. The organisational machinery was kept small; we relied instead on the strength and energy of the solar idea, of solar art.

In a lecture and demonstration at the Exploratorium in San Francisco, I brought solar art into a dialogue with the local solar installation of the American designer Bob Miller. In the latter, the beams of sunlight are broken down into the full range of spectral colours by prisms and relayed on by mirrors.

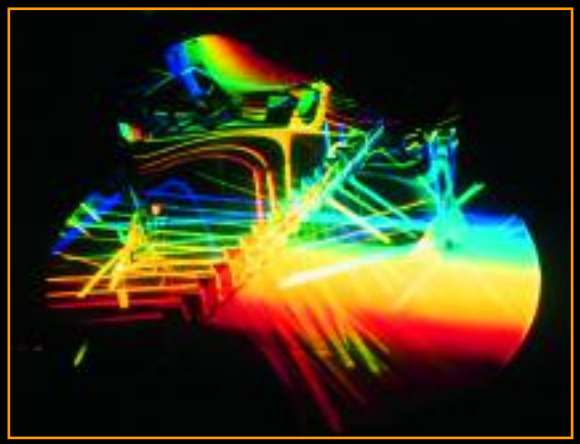
Designer couple Alex and Martha Nicoloff from Berkeley/California use exclusively self-ground prisms for their solar installations. Their spectral creations, which they have also documented in a series of videos, became part of the SolArt network, as did the solar art of Japanese artist Setsuko Ishii, whom we visited in Tokyo. Her work included two projects in which sunlight is routed via fibre-optics from the building shell, via a so-called »sunflower« collector and into the laboratories and seminar rooms of the basement level, where it is used to illuminate holograms. These optical systems stand out by the fact that they bring light to works of art.

As a summary of our world tour we organised an international conference entitled »Solar Energy – Art Energy« at the Centre Overoth near Eupen in Eastern Belgium in September 1993.

Michael Meliß, professor for power engineering at the Aachen Technical College (FH), Germany, since 1987, had only recently, in 1991, launched the Jülich Solar Institute, a project he pursued with extraordinary commitment until his all too premature death in August 2000. He was a strong proponent of the network, as he also sought the extended cultural context for his own institute. A dedicated champion of renewable energies, he saw our network as a chance for »global solar decentralisation« and hoped for »new creative impetus in the cooperation between artists, scientists and architects.«

Roger Malina, an astrophysicist attending from the USA, captured the whole essence in a concise statement: »We can only do things which we are able to imagine. When we speak about solar energy, it is not a technical, scientific or economic problem. It is a cultural problem.«

The possible materialisation of such an interaction of social discourse, ecological commitment and solar art was demonstrated to us by Californian designer and artist Peter Erskine during another coordination tour in the following year, in 1994. At his house in Venice, on the Pacific coast by Los Angeles, he erected a heliostat on the roof to channel sunlight to numerous mirrors mounted indoors in his studio. From there, it was projected to special installations with reflective coatings. Direct sunlight transformed the whole room into a spectral stage set. In 1993, Erskine reproduced this on a large scale as part of

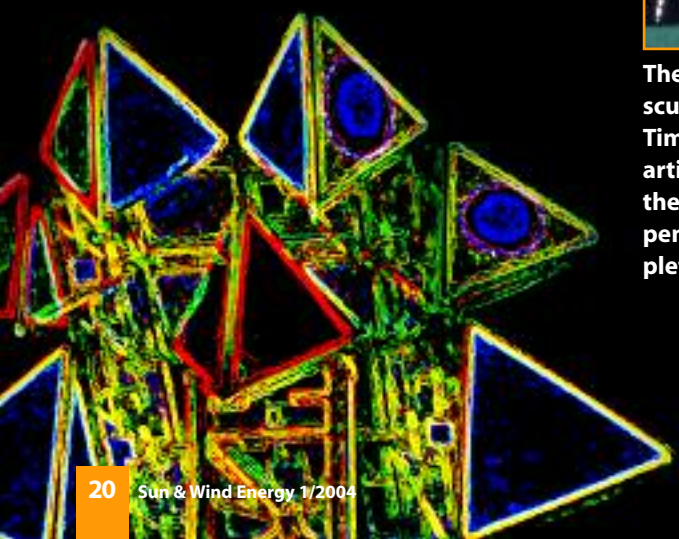


Alex and Martha Nicoloff, California: Solar installations incorporating self-ground prisms

Night view of the »Solar Crystal« created by Jürgen Claus in 1994/95 and standing in front of the main entrance of the Aachen Technical College in Jülich, Germany.

Nora Claus in front of the solar city model by American architect Paolo Soleri

The eleven-metre high sculpture »Evidence of Time« created by American artist Sally Weber takes the form of an upturned pendulum coated completely with reflective foil.



the SolArt Global Network in and in front of the Berlin Congress Hall. By way of an exhibition entitled »S.O.S. – Secrets of the Sun«, visitors were also confronted with information regarding ozone pollution and endangered species. A daring balancing act between artistic experience and environmental problem-awareness. Another more recent solar installation by Peter Erskine was set up in 2000 for the exhibition »Sun, Moon and Stars – Culture and Nature of Energy« at the Kokerei Zollverein in Essen, Germany. The visitors passing through the upper areas of the exhibition were immersed in a world of spectral colours created from the sunlight.

Prisms, mirrors, holograms

The SolArt Global Network is founded on the active participation of a number of woman artists. Alongside Nora Claus and previously mentioned Japanese artist Setsuko Ishii, special recognition is due above all to our two American colleagues Janet Saad-Cook and Sally Weber. Through their solar works, links to old cultures are brought into the contemporary cultural arena, for example the buildings of the Navajo Indians which were aligned according to the position of the sun.

Janet Saad-Cook, who is today at home in Arlington/Virginia, lived in the artists' centre Santa Fe/New Mexico in the nineties. When we visited her there, she showed us her »sun drawings«; beams of light fall onto a reflector of steel, bronze and special optically coated glass and are projected onto the opposite walls in a manner apart, dependent on the rotation of the Earth.

When we invited Sally Weber to join the SolArt Global Network in 1994, she had already produced several solar works. These included an eleven-metre-high sculpture entitled »Evidence of Time« in the form of an upturned pendulum coated completely with reflective foil. The incident sunlight is broken into the full spectrum of colours. These colours then change with the movements of the solar pendulum, which swings about one metre to each side.

At the end of the nineties, Sally Weber produced a solar glass facade for the entrance to the library in Ventura. What at first sight appears to be traditional glass painting, is revealed upon closer appraisal to be a multitude of computer printouts output onto special film and laminated into the glass.

All these examples by both designers and artists inspire innovative ideas for aesthetic creations using solar energy. Prisms, mirrors, holograms, reflective materials, etc. are here placed in a solar context which stands primarily for itself, but at the same time also unfolds effects in and on buildings. In Germany, this finds expression in the holographic optical systems developed above all by Professor Helmut F.O. Müller at the University of Dortmund, for example for the library in the Mont Cenis Building in Herne.

But what about the integration of photovoltaic modules into solar works of art? After testing of numerous models, we produced the »Solar Crystal« in 1994/95, as our own contribution to the SolArt Global Network. Together with lecturer Wolfgang Krug and students of the Aachen-Jülich Technical College, Germany, we designed the six-metre high sculpture standing in front of the main entrance to the college such that, once dusk falls, the six solar modules, with a maximum energy output of 53 W_p each, illuminate eleven coloured glass tetrahedra from within. This was accomplished with a set of six battery cells with a nominal voltage of 12 volts. Up to the end of June 2003, the »Solar Crystal« had been lit for a total of 7,400 hours over the eight years, and with its energy autonomy shines as an eloquent expression of the capabilities of photovoltaics. In September 1995, Nora and I received the European Solar Prize for our work in connection with the SolArt Global Network.

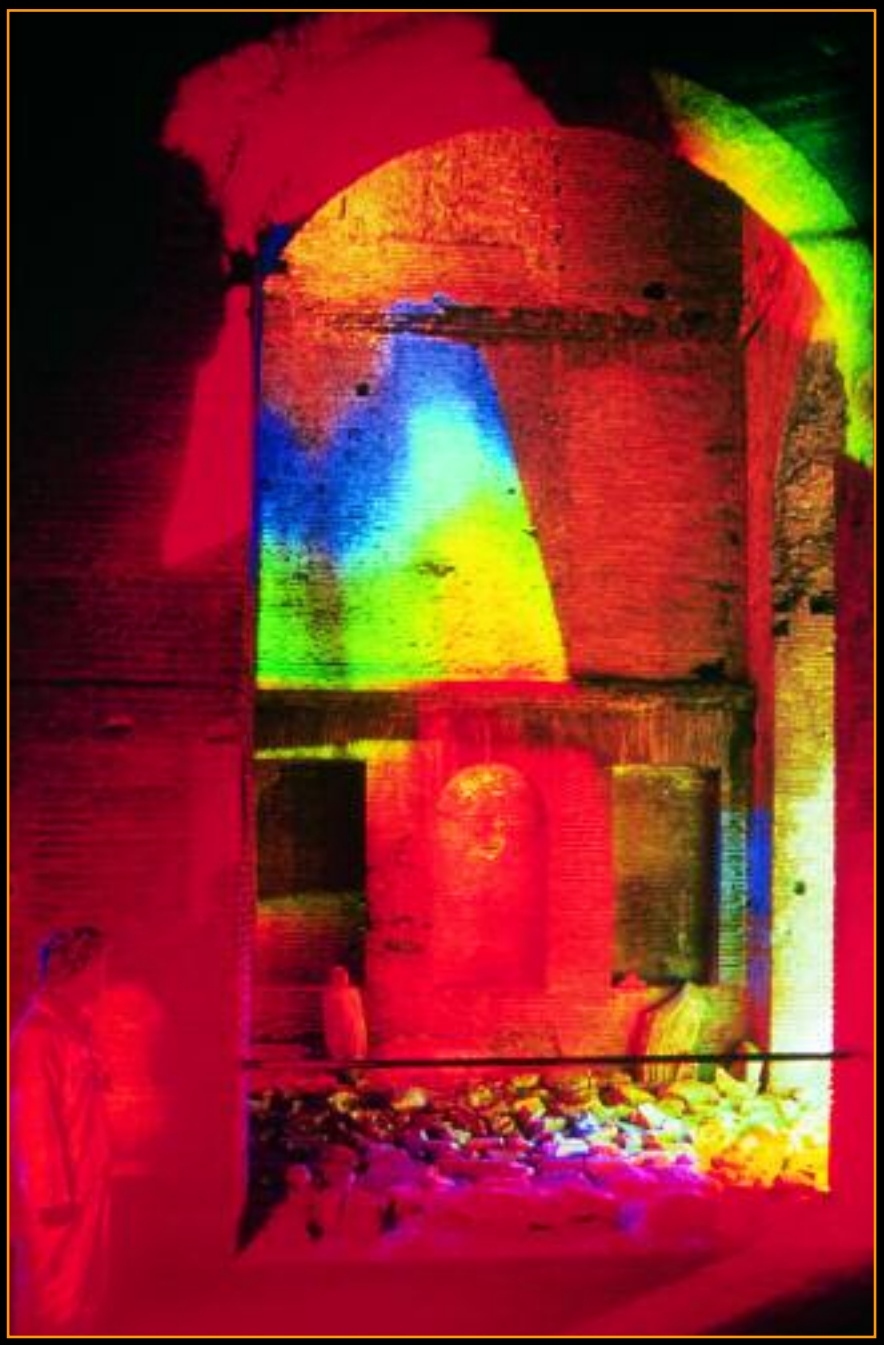
The prize was at the same time motivation to continue along the road mapped out by the network. In 1997, the local public utility Albwerk in Geislingen, Germany, commissioned another sculpture to stand in front of its main offices. I based this sculpture on the structure of an icosahedron, in other words a solid formed by twenty equilateral triangles. The sculpture is suspended on a six-metre supporting mast. The windows in the upper section are each fitted with 54 monocrystalline solar cells. A single triangular window module supplies 81 W_p, whereby the energy collected during the day is stored in batteries as an island solution. For the ten centre windows, inlay techniques were used to create symbolic designs representing the natural elements: water is depicted by a wave; the earth by a plant; all complemented by the symbol of a large-scale sun. During the daytime, the icosahedron is moved slowly by an integrated motor; in the evening, the coloured glass windows are illuminated from inside. Developed in our proven team with Wolfgang Krug, the energy-independent »Solar Icosahedron« has itself become a symbol – for the use of renewable energies in the urban environment.

Looking to the future of the SolArt Global Network, I see excellent potential in solar art and solar design, which together lay the foundations for an international exhibition. The repercussions of such a presentation of solar light concepts are not to be underestimated, also for the context of »everyday« activities in solar architecture. Whereas, on the one hand, solar design is able to embody and shape the light of the sun directly, solar art, by contrast, targets the experiential character of cosmic light. Both approaches together demonstrate to the world, how light and renewable energies can be integrated creatively into our everyday lives and activities. ✹

Jürgen Claus

Internet:
www.khm.de/~SolArt
www.juergenclaus.de

Setsuko Ishii: Spin Photon with Sunlight, Tokyo 1992
Photo: Setsuko Ishii



Peter Erskine: »Secrets of the Sun«, Trajan's Market, Rome *Photo: Peter Erskine*