SOLAR PROTOCOL
a sustainable art installation

October 6-7, 2022 >> 9:00-19:00
Aula Magna Ca' Dolfin, Dorsoduro 3825/D, Venice

by **Tega Brain, Alex Nathanson, and Benedetta Piantella (NYU Tandon)**
curated by **Diego Mantoan (University of Palermo)**
assistant curators **Silvia Ballarin and Francesca Barea (Ca' Foscari University)**
exhibition manager **Anna Bonfante (Ca' Foscari University)**

on the occasion of the **INTERNATIONAL CONFERENCE**
Toward a Sustainable Attitude: Philosophy, the Arts, and the Environment
October 6-8, 2022 | Ca' Foscari University of Venice

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Back to Intermittence: A Curatorial Note
by Diego Mantoan

Pretending that the world wide web can save us from global warming, keeping us all connected at home and thus avoiding the impact of transportation, is but a misleading utopia that perhaps just nurtured our pandemic lockdowns. To the contrary, accurate studies reveal that the ecological impact of the server networks necessary to keep the internet constantly working at its highest possible performance rate will soon exceed the CO2 pollution of the aviation industry, it's just a matter of years. Hence, being connected all the time will cost the environment at least as much as taking a plane in terms of carbon footprint. A profound rethinking of the use we make of the internet is urgently needed, especially of its modes of management and power consumption. Finding green energy sources for the web is increasingly relevant, though it won't be sufficient if at the same time we don't shift our attitude towards media consumption.
The artwork *Solar Protocol* was planned and constructed by Tega Brain, Benedetta Piantella, and Alex Nathanson of New York University in order to stigmatize the necessity to rethink global server networks that feed the internet in a democratic and sustainable way. First of all, their project is based on the collective will to create an interconnected community that avoids

pollution. This aim is accomplished by means of a return to natural systems, as with the sun which shines during the day and vanishes at night. The point is not simply to rely on technological solutions based on clean energy sources, but rather to embrace a different attitude, a new perspective that gets us used again to intermittence. The global server network created by the three artists revolves precisely around this crucial principle, the acceptance of dishomogeneous levels of power. The batteries recharge with the sun leaning on a worldwide network of steward servers, but the battery level may vary and this is reflected on the aesthetic of the mediatic transmission. The exemplary website dynamically responds to the charge level, at times obliterating the images, some other time transforming the color grade down to black and white. It is the plastic demonstration that the web –and even our entire society– cannot be calibrated on the maximum consumption or on peak-performance status. We have to abandon the idea that we can be connected all the time at maximum level. We rather need to recognize the relevance and beauty of intermittence, of patience, of suspension, and of expectation.

Venice is an emblematic city with regard to the kind of intermittent attitude, which *Solar Protocol* is aiming at. In the lagoon, when the tide stands high above the street pavement one cannot go on as usual. Through the so-called 'acqua alta' nature reclaims its own timing and humans must try to adapt their pace, sometimes coming to a still stand. The Venetian exhibit of *Solar Protocol* presents the viewer with a large disc suspended in the Baroque hall of the 18th century Ca' Dolfin palace onto which a circular diagram is being projected, thus showing the last 72 hours of the solar server network's functioning. In doing so, interconnection and intermittence, which lie at the heart of this artistic project, find a plastic form and utter their importance for a new and necessary way to make the internet sustainable. In this sense, the artwork fits neatly into the spirit of the international conference *Toward a Sustainable Attitude: Philosophy, the Arts, and the Environment* around which scholars are gathering to discuss the cultural paradigm shift that society –Western society, in particular– must undergo as soon as possible.

The magnificent setting of Ca' Dolfin's Aula Magna, once the ball room coronated by the canvasses of a Master of light such as Giambattista Tiepolo, operates as an ideal stage to let *Solar Protocol* interact with the kind of attitude it fosters. The mirrors of the hall amplify the light, be it from the sun or from candles, allowing the overall illumination to be bolstered by the interaction of numerous elements. The big circle at the center of the room evokes the strength of the sun by means of a diagram, thus filling the void of the missing Tiepolo paintings, of which many are now preserved at the Met in New York. The connection between the Big Apple and the Most Serene Republic is thus emboldened on the occasion of the Venice Biennale, which this year is trying to make sustainability its very trademark. However, the work by Brain, Nathanson, and Piantella pushes the issue much further than a mere wishful stance, since it offers a sublime example of the paradigm shift towards intermittence that our society soon must reckon with. In its solitary beauty, *Solar Protocol* is at one and the same time a creative experiment with technological means, a radical change in attitude, and a collective revolutionary action, as well as a much needed artwork.

For a Sustainable Web: The Project Explained
by Silvia Ballarin

Solar Protocol is an artwork designed by Tega Brain, Benedetta Piantella and Alex Nathanson. It is a web platform hosted by solar-powered servers. A solar-powered server is a computer powered by a battery and a small solar panel. It can guarantee intermittent connectivity that depends on the available sunlight. The set of devices located in different time zones creates a network that allows direct internet traffic where there is more solar energy. The servers are currently present in ten locations around the world: Peterborough in Canada, New York City and Philadelphia in the United States, Santiago in Chile, Nairobi in Kenya, New Castle and Alice Spring in Australia, Amsterdam in the Netherlands, Beijing in China and the Kalinago Territory in Dominica.
Solar Protocol's decision-making process follows the logic of the sun's interaction with the earth as a form of natural logic to automate decisions, in provocative contrast to the mechanisms of artificial intelligence based on data and methods. As a result, the website may appear different during the time of the day and the year. The software changes the style and resolution of the media depending on the amount of energy stored in the battery. Therefore, the website may not work if the stored energy is not enough. The more servers exist, located in multiple different time zones, the lower this risk will be.
The individual servers are installed and managed independently by volunteers called *Server Stewards*, who assemble their servers using locally sourced components with the remote support of the *Solar Protocol* team. Therefore, the success and long-term durability of the project are closely linked to the members of the community who support it and consequently own it.
On the website, it is possible to view the active server, the related energy data, the steward from which it is managed and the climatic and meteorological conditions of the place where it is located. Eventually, *Solar Protocol* represents a call to rethink our relationship with the internet and the ecological footprint of online decisions. It is a system that experiments with the qualities of renewable energy to create energy efficient content and promote responsible online behaviors from the point of view of environmental impact.
Solar Protocol has been presented or exhibited in the past at *Ars Electronica* (Linz, September 8-12, 2021) and at the *3rd Asian Digital Arts Exhibition*, which was held at the Beijing Times Art Museum (Beijing, July 23 - August 31, 2021).

Three Artists at the NYU School of Engineering

Tega Brain is an Australian-born artist and environmental engineer whose work examines issues of ecology, data systems and infrastructure. She has created wireless networks that respond to natural phenomena, systems for obfuscating fitness data, and an online smell-based dating service. She has exhibited at the Vienna Biennale for Change and the Guangzhou Triennial, as well as at museums like the Whitney Museum of American Art and the Haus der Kulturen der Welt in Berlin. Her work has been widely discussed in the press including in Art Forum, the New Yorker, Art in America, The Atlantic, NPR, Al Jazeera and The Guardian and in art and technology blogs like the Creators Project and Creative Applications. She has given talks and workshops at museums and festivals like EYEO, TedxSydney and the Sonar Festival and been awarded fellowships at Data & Society,

Eyebeam, GASP Public Art Park and the Australia Council for the Arts. She is an Assistant Professor of Integrated Digital Media at New York University. Her first book, Code as Creative Medium, is co-authored with Golan Levin and published with MIT Press. She also runs the Learning to Teach conference series in partnership with the Processing Foundation and the School for Poetic Computation.

Alex Nathanson is a designer, multimedia artist, technologist, and educator. His work is primarily focused on exploring both the experimental and practical applications of sustainable energy technologies, particularly photovoltaic solar power. His work has been featured at Issue Project Room (NYC), the Climate Museum (NYC), the Museum of the Moving Image (NYC), Anthology Film Archives (NYC), Film Society of Lincoln Center (NYC), Dome of Visions (Copenhagen, Denmark), and the Art Prospect Festival (St. Petersburg, Russia), among other venues. He was one of the long-term artists in residence at Flux Factory, in Queens, NY from 2012 to 2016, and in collaboration with his multimedia performance group Fan Letters was awarded residencies at The Watermill Center in 2017 and 2019. In 2020, *Solar Protocol* was awarded a fellowship from Eyebeam. As an educator, he works with students as young as 7 to graduate students and working professionals, teaching engineering skills through creative projects. He is a certified NABCEP Photovoltaic Associate and received a M.S. in Integrated Digital Media from NYU Tandon School of Engineering in 2019. Currently, he is an Adjunct Professor in the IDM program at NYU Tandon. His book, A History of Solar Power Art and Design was recently published by Routledge.

Benedetta Piantella is an artist and designer turned humanitarian technologist, after she helped organize emergency response efforts during the Indian Ocean Tsunami of 2004 in Sri Lanka. She has taught Lego robotics and worked for Arduino in Milan and, after receiving a Master's from the Interactive Telecommunications Program at NYU in 2008, she worked at Smart Design in NYC producing interactive prototypes for high-end clients. She co-founded GROUND Lab® and more recently T4D Lab®, engineering R&D companies focused on producing sustainable solutions to humanitarian, social, environmental challenges worldwide. She has built partnerships with organizations such as the UN, UNICEF and Universities such as NYU, Columbia and Princeton and have designed, prototyped and deployed projects in countries such as Uganda, Kenya and Tanzania. She is a frequent lecturer, an Open Source advocate and she currently teaches at NYU Tandon School of Engineering in the Technology, Culture and Society Department.

Web references

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