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Published in:

Proceedings of EVA London 2022

Published: 05/07/2022

Document Version:

Final Published version, also known as Publisher's PDF, Publisher's Final version or Version of Record

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Publication record in CityU Scholars:

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Published version (DOI):

[10.14236/ewic/EVA2022.10](https://doi.org/10.14236/ewic/EVA2022.10)

Publication details:

Reinhuber, E. E. (2022). *National Flowers in Blue: Resurrecting analog imaging techniques in the era of big data and pixel perfection*. In J. P. Bowen, J. Weinel, A. Borda, & G. Diprose (Eds.), *Proceedings of EVA London 2022* (pp. 46-50). BCS Learning and Development Ltd.. <https://doi.org/10.14236/ewic/EVA2022.10>

Citing this paper

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National Flowers in Blue: Reinvigorating analog imaging techniques in the era of big data and pixel perfection

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The historic cyanotype process is an answer to current challenges of photography. Artists employ an outdated technique to experience the incomprehensible power of the photon and the material qualities of chemical photo-processing. The deficits of immediate availability and inescapable automatism inherent in the current photographic discourse are answered by recourse to traditional methods of craft. My artistic project for an exhibition on dystopian nature is introduced in the context of the ancient method and its application.

Cyanotype. CCTV. National flower. Photography. Natural History Museum installation. Preservation.

1. INTRODUCTION

The artistic project *National Flowers* combines digital photographs with the historic cyanotype process, depicting the different generations of CCTV cameras of a public transport network.

The starting point for the project was the sensation of constant observation in the tropical city state of Singapore, manifested through the omnipresent surveillance cameras, in particular the flower-like arrangements at each entrance to the mass rapid transit system (MRT). With the systematic capturing of all camera arrays along two of the major rail-network lines, it was essential to elaborate an adequate form for presentation beyond a series of trivial digital images which represent slight variants of the CCTVs. With their flower-like appearance, a specific photographic printing technique which was used for the documentation of plant species nearly two centuries ago proved to be ideal for the project: cyanotype.

2. CYANOTYPE – FROM SCIENCE TO ART

In the current era, in which snapping technical convincing ephemeral photographs digitally became ubiquitous, a tendency can be observed to rediscover historic analogue techniques with all

their imperfections and haptic quality. Among them is the cyanotype process, also known as blueprint because of its distinctive Prussian blue hue. For several years now it has been favoured amidst the popular alternative processes, as it is easy to handle, affordable and less toxic than other methods.



Figure 1: Arrangement of CCTV cameras along Singapore's MRT line

First developed by Sir John Herschel in 1842, the cyanotype process was embraced by botanist Anna Atkins, who had been interested in Talbot's process and following its development. Atkins finished her first book on British algae the following year with 194 meticulously arranged plates, including the

botanic title of the species. The shape and translucent structure of the plants was recorded accurately and faster than by drawing. Her books are still on display in renowned institutions such as the Royal Botanic Garden of Edinburgh and the Natural History Museum, London.

For the procedure, potassium ferricyanide and ferric ammonium citrate are diluted with water and mixed; then applied to absorbent paper or fabric and dried. The exposure to ultraviolet light in the range of 365nm on the photosensitive surface causes a photoreaction; when rinsed in water, the image becomes visible while the excess chemicals are washed away and the distinctive blue develops its full intensity during the drying process.

With its origin in scientific imaging, blueprints used to be an essential tool for documentation and duplication, as well for architects and engineers to multiply technical drawings. Herschel's daughter Julia collated cyanotypes to a creative practice and illustrated in 1869 *A handbook for Greek and Roman lace making* (Ware 2016).

Occasionally, cyanotype is confused with the diazo printing process, employed in the 20th century for the above mentioned industrial applications, invented by Father Raphael Kögel OSB from Munich and commercially exploited by the Kalle company of Wiesbaden under the brand name *Ozalid* (USPTO 1929); characteristic is the acrid odour, indicating the other chemicals used.

Although several early images are preserved, it appears that only in recent years, the process found its artistic legitimacy. As Nancy Burns, co-curator of the exhibition *Cyanotypes: Photography's Blue Period* (New York 2016) stated in an interview: "They were so easy they almost didn't count [...]. And the fine arts establishment turned its nose on something that was so easy. The fact that they were blue was also just too weird for people" (Voon 2016).

Cyanotype offers a wide range of applications, as evident in the work of the following artists.

Around 1950, the artist couple **Susan Weil** and **Robert Rauschenberg** produced a number of life-sized cyanotypes in the manner of Anna Atkins' 'photogenic drawings' Instead of seaweed, they used their own bodies, tracing their contours and shapes. The large-scale prints were evocatively staged, with the effect of semi-transparent clothes and other carefully draped materials.

Barbara Kasten focuses her images, which often combine multiple techniques, on the layering and folding of materials, in particular wire mesh, to achieve abstract structures. In her project *Amphora* (1996), Kasten worked with the Collection of The Museum of Underwater Archaeology in Bodrum,

Turkey. Several ancient amphoras were placed on the light sensitive material. Because of their roundish shape, the proximity to the flat paper varied enormously, as did the shades of hue in the final result, which was reminiscent of their existence under water.

Marco Breuer applies the light-sensitive liquid in drops or patches as chemigrams, brushing the chemicals on the surface of the paper in multiple layers to receive abstract patterns, such as in *Untitled (E-33)* (2005) or deep blue circles in *Spin (E-197)* (2008).

Peter Miller challenged the actual process of the cyanotype by exposing the treated linen to rain and to sun. The result of combining exposure to the sun and rinsing with the rain is a light blue cloth with traces of droplets still visible on closer inspection. He refers to *Rain on a Sunny Day* (2015) as a "self-portrait of rain". For another cyanotype, *Die große Maschine I* (2015), he applied the folding technique for making a paper plane to the sensitised material during exposure, resulting in obvious traces of the folds on the final print.

Rodney Graham's *Mariachi Tie* (2005) calls to mind in its shape a butterfly and is consequently printed as cyanotype next to a black and white image. Different from the previously introduced unique pieces, this print is a reproduction from a negative and exists in an edition of 18.

Noelle Mason applied the blueprint process to X-ray images of human trafficking, which were captured by the *U.S. Customs and Border Protection*. Although the pictures, which reveal eerie hidden immigrants in all kind of vessels, receive additional attention once transferred into an artistic context, it remains questionable if the transfer of the small digital images, found on the internet, to another medium can be considered an independent artistic work and sold on online platforms.

Christian Marclay, in his book *Cyanotypes* (2009), applied the disregarded technique to present the obsolete remains of another medium. The taxonomy of audio cassettes and the unspooled magnetic tape recalls serene images of algae or similar plants, while the mute works suggest in the individual titles some of the performers of the depicted sound recordings. Six series range from images which show the cassettes accurately arranged in a regular fashion, as their numbered title *Large Cassette Grid* indicates, others seem to display organic structures in a chaotic arrangement while further images mix the curly tape with the rectangular cases, as for instance in *Allover (Dixie Chicks, Nat King Cole and Others)*.



Figure 2: Two examples of National Flowers, 2021

3. NATIONAL FLOWERS

For my project, *National Flowers*, I began to digitally collect images of all CCTV arrays along the oldest section of Singapore's main MRT network – the East-West line, as well as a section of the North-South line during less busy weekends and holidays. Besides capturing images which show the installations in their surroundings, each arrangement was captured from underneath its centre with my lens pointing straight upwards. As a reminder of the imaging process behind the multiple observing- and recording-systems, I planned initially to capture the images with an analogue SLR camera; similar to my earlier projects such as *DIN4067*. However, a compact digital camera with a foldable display and manual control (Sony RX100 VII) facilitated the recording of RAW files and enabled the collection of the images to go mainly unnoticed. The impressive amount of cameras, most of which are arranged like flower petals around a centre, resulted in a large database. The folders for each array were named according to the train line, the location, the acronym for the train station and the numbers of the individual cameras. This became also the caption for each print together with the title of the project (e.g. East West line, station number 14, Raffles Place, cameras 285-290: EW14 RFP C285-290).



Figure 3: Showcase with Cyanotypes of National Flowers in the exhibition 'Future Memories' 2021

As the images were all quite similar, with only peculiar differences in their details, I was reminded of the work of a botanist, observing different specimen of the same plant family. Also, since Singapore is proud of her National Flower, the hybrid orchid Miss Vanda Joachim, I observed a similarity to the flower-like camera-arrangements and propose that these might be the true national flowers of the surveillance state.

With these references, it became evident that the technique applied by the legendary botanist Atkins would be well-suited to my project. The transfer from a digital database of surveillance cameras to an early analogue technique invites reflection on the development and presence of imaging technologies, by reclaiming sovereignty over the procedure of image-capturing and processing.

Although all installations were captured from the same angle, similar in size and with identical settings, the surrounding and lighting situation differed hugely. Therefore, all cameras were clipped from the background. The resulting masked images covered a wide range of grey and beige shades. The initial prints were still not sufficiently harmonious to achieve a satisfactory result, which was only achieved through the transfer to cyanotype.

After several experiments in size, density and contrast as well as tests with a positive or negative, the camera arrangements were laser-printed on transparent film including the caption underneath, with the essential information about the 'species', similar to the *British Algae*.

These digital negatives were then exposed as cyanotypes. Initially under sunlight, resulting in a good tonal range and intense blue tone. Since the exposure time was around 10 minutes for each of the 165 images, the unforeseeable weather conditions with wind and rain demanded another solution. Even in Hong Kong, artificial UV light with the specific wavelength of 365nm cannot be easily found in the many lamp shops. Finally, a unit for silk-screen-printing was used, although the light was not as evenly distributed, so that only one print in the size of 5x7" could be exposed at a time. As an advantage, the time could be reduced to 8 minutes with a constant result, unaffected by the changing intensity of the sun. After testing different types of paper and fabric, a finely woven cotton sateen provided the best result. The chemistry could be evenly applied by soaking the cotton in the mixed cyanotype liquid and showed sufficient details with a fine surface. For the presentation, the cloth swatches were mounted on cardboard.

Although one might argue that the images could have been printed digitally in the style of cyanotypes, the tactile process of creating positives with basic ingredients through the exposure to light had almost a therapeutic effect in the current situation where most of our activities happen in front of a screen. Moreover, the artistic value of each image is an individual achievement, in this way unique copies are created one by one, instead of reproductions being spat out at the push of a button. At the exhibition in the Singing Waves Gallery, Hong Kong, in April 2021, a selection – one image for each train station – was presented under the title *National Flowers [Observation]* in four showcases, arranged to evoke a 19th century natural history museum and further reference the cyanotype heritage. A wallpaper with a floral pattern composed of the CCTV cameras completed the installation and tableaus, with information about the taxonomy, distribution, classification and a species inventory placed on the walls.

During this time, another set-up, titled *National Flowers [Reflection]*, employed the same digital footage of the masked camera arrays and was presented as a closed-circuit installation at the “Artmachines: Past/Present” exhibition, in the Indra and Harry Banga Gallery, Hong Kong. The work consists of a CCTV camera at the edge of a mirror-clad triangular prism, observing a display with the images. The kaleidoscopic effect inside the prism turned the cameras into floral ornaments. Users could interact with the display, exploring flowerlike patterns on the projection of the camera’s live-stream.

Comparing both exhibitions, the transfer to an analogue medium left a much stronger impression on the audience, in particular by treating the technical equipment like a botanical species. Commenting on *National Flowers*, the curator of the exhibition Harald Krämer noted their connection to the diminishment of a variety of species in our natural environment. Therefore, we need to find other subjects for research and examination (Krämer 2021).

4. CONSIDERATION

The reassessment of historic photochemical techniques allows the photographer a renewed self-empowerment in her practice, as she is no longer at the mercy of the machines but able to define the result for herself.

Otherwise she would be confined by the power of image processing programmes or photo laboratories’ machinations, just as every rider on the public transport system is the object of surveillance cameras’ viewpoints and analysis programmes.

As Vilém Flusser writes in *Into the Universe of Technical Images* on page 37: “With the visionary it is quite different: he controls an automatic apparatus that harnesses all this for him so that he can concentrate entirely on the surface to be envisioned. The criteria he applies when he pushes the buttons are thus superficial in both senses of the word: they have nothing to do with the deeper craft of image construction, and they have nothing to do with what goes beyond the surface to be produced.”



Figure 4: Exhibition installation of *National Flowers* in 'Future Memories. Utopia Dystopia Nature.,' 2021

5. REFERENCES

- Atkins, A. (1843-53) *British Algae: Cyanotype Impressions*. privately printed, Halstead, Kent. Only a dozen copies are known to exist, see: Schaaf, L.J. and Kraus, H.P. (1985). *Sun Gardens – Victorian photograms by Anna Atkins*. Aperture Books, New York City.
- Duffy, C. (2014) Father Kögel and the ultra-violet examination of manuscripts bl.uk/collectioncare/2014/03/father-kogel-and-the-ultra-violet-examination-of-manuscripts.html (Jan. 1, 2022)
- Durant, M. A. (2007) Marco Breuer [originally published in *Aperture*] <https://saint-lucy.com/essays/marco-breuer-the-material-in-question/> (Jan. 1, 2022)
- Elcott N. M.; Norr, D. L., ed. (2011) *Christian Marclay: Cyanotypes*. JRP|Ringier Books, Genève.
- Flusser, F. (2011) *Into the Universe of Technical Images*. University of Minnesota Press (Electronic Mediations, Volume 32), Minneapolis
- Graham, R. (2005) Mariachi Tie. <http://www.moma.org/collection/works/175761> (Jan. 1, 2022)
- Herschel, J. F. W. (1842) *On the Action of the Rays of the Solar Spectrum on Vegetable Colours and on Some New Photographic Processes*, *Philosophical Transactions of the Royal Society*, 202 <https://royalsocietypublishing.org/doi/pdf/10.1098/rs.tl.1842.0013> (Jan. 1, 2022)
- Kasten, B. (1996) Amphora <http://barbarakasten.net/amphora/> (Jan. 1, 2022)
- Kraemer, H. (2022) *Future Memories. Utopia Dystopia Nature*. Triton, Barcelona, Hong Kong, Vienna; pp. 148-151.
- Lachowskyj C. and Mason, N. (2019) X-Ray Vision vs. Invisibility. Interview <https://www.lensculture.com/articles/noelle-mason-x-ray-vision-vs-invisibility> (Jan. 1, 2022)
- Lobel, M. *Lost and Found: Susan Weil and Robert Rauschenberg's Blueprints* Artforum International (2016) Vol.54 N°6: 184–196 www.artforum.com/print/201602/lost-and-found-susan-weil-and-robert-rauschenberg-s-blueprints-57461 (Jan. 1, 2022)
- Lotzof, K. (^{n/a}) Anna Atkins's cyanotypes: the first book of photographs www.nhm.ac.uk/discover/anna-atkins-cyanotypes-the-first-book-of-photographs.html (Jan. 1, 2022)
- Macnish, K. (2017) *The Ethics of Surveillance. An Introduction*. Routledge, Abingdon.
- Ridley H. N. (June 24, 1893) New or Noteworthy Plants. Vanda Miss Joaquim. *The Gardeners' Chronicle*, 8, 740.
- Shaw, J.; Allen, R. (2020) *Art Machines*. City University of Hong Kong Press, Hong Kong.
- Troiano V. S. (2019) The “Bauhaus Idea” in Robert Rauschenberg's Blueprints https://cloud-cuckoo.net/fileadmin/hefte_de/heft_39/artikel_troiano.pdf (Jan. 1, 2022)
- United States Patent and Trademark Office. *Serial 71,260,891 OZALID* (1929) https://tsdr.uspto.gov/#caseNumber=71260891&caseType=SERIAL_NO&searchType=statusSearch
- Ware, M. (2016) *Cyanomicon – History, Science and Art of Cyanotype: photographic printing in Prussian blue* www.mikeware.co.uk/downloads/Cyanomicon_II.pdf (Jan. 1, 2022)