

CP 470I – Protocinematic Production

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CYANOTYPE

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Etymology

- cyano- (Greek: *kuaneos* dark blue) +
-type (Greek: *tupos* print)
- Chemical reaction by UV light and iron salts

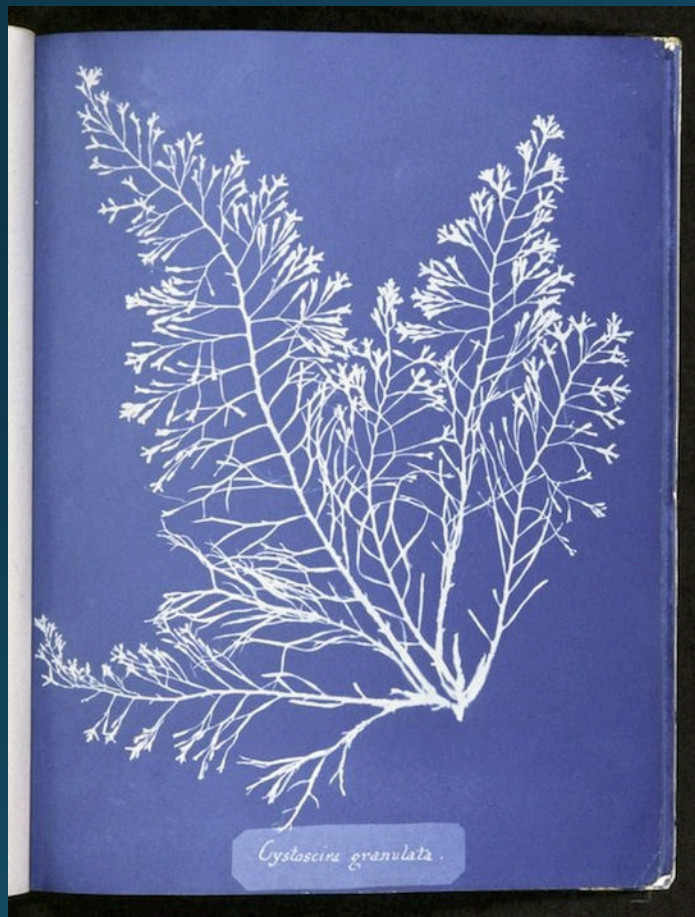
John Herschel (1792-1871)

- British physical scientist
- Discovered process in 1842
- Experimented with the process of photography
- Sought to understand photochemical phenomena
 - Tools for investigating the electromagnetic spectrum outside human vision
- Hoped to find a photographic process in natural color

History

Main phases of use:

1. 1840s-1870s: Plant illustration (scientific purposes)
 - Anna Atkins: botanical photograms
 - Compared to people who pursued photography, cyanotype was carried out by very few people
- Insignificant status



History

2. 1870s-1910s: Entrepreneurs rediscovered it for commercial purposes
 - Copying plans (industry)
 - Proofing negatives (photography)
 - Success because of reprographic application, not pictorial/aesthetic use

History

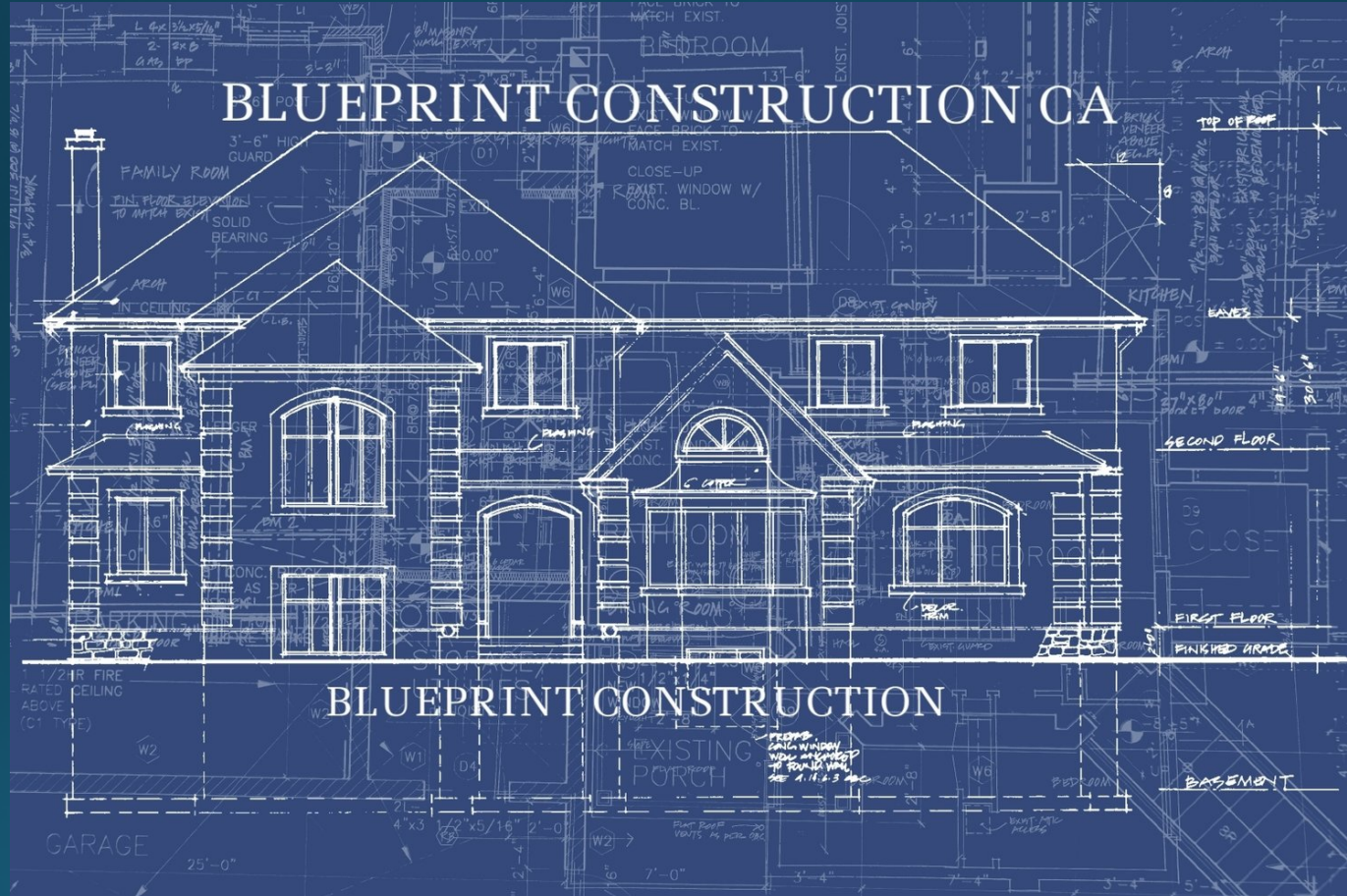
3. 1910s-1970s: Blueprints

- Cheap, sensitized paper
- Universal application
- Industrial use

4. Today: Revival

- Cheap, low toxicity, easy to manipulate, application to various surfaces, every format, no patent

BLUEPRINT CONSTRUCTION CA





Perception

After discovery:

- Britain: Various artists and photographers detested and disapproved of the powerful color and simplistic/amateurish technique
- More accepted in France, Canada, USA

Perception

- (Possible) reasons for bad reputation
 - Facile, cheap, unsophisticated → art for the unskilled
 - Unnatural color → unaesthetic
 - Blue does not evoke the notion of precious, delicate art

Prussian Blue

- Traditionally made of blood and iron
 - Dried ox blood
- Unnatural color: does not exist in nature
- Was already important to science before discovery of cyanotype



Process

- Paper is sensitized with a mixture of ferric ammonium citrate and potassium ferricyanide
 - Photosensitive solution
- After drying, the paper is exposed to **ultraviolet light**
 - Reduction of the Fe(III) (ferric) salts to Fe(II) (ferrous) with citrate as the electron donor
 - The Fe(II) ion complexes with ferricyanide ion, with subsequent electron transfer, to form insoluble ferric ferrocyanide—iron(III) hexacyanoferrate(II), or **Prussian blue**

Process

- The image appears as the paper is exposed to UV light
- After sufficient exposure, the paper is washed in water to remove the soluble unexposed salts
- While drying, the final image darkens as a result of either slow oxidation in air or some changes in iron coordination with loss of water

Sources

- Lawrence, Glen D. and Stuart Fishelson. "UV Catalysis, Cyanotype Photography, and Sunscreens." *Journal of Chemical Education*, vol. 76, no. 9, September 1999, pp. 1199-1200. Accessed 11 February 2019.
- Ware, Mike. *Cyanotype: The history, science and art of photographic printing in Prussian blue*. Science Museum and National Museum of Photography, Film & Television, 1999.